

FOR ACOUSTIC COUPLERS
TEL: 01 403 4803

Computer Weekly

Thursday, September 2, 1982

Philips to try again on UK Satellite launch

by Boris Sedacca
AFTER a dismal first showing, Philips is to have a UK relaunch of its Satellite portable text entry terminal this month.

The Satellite was first launched last year, but so far only the Canadian-built models have been available. These lack, among other things, the pound sign.

About 150 of them have gone out to customers, with another 300 sitting on agents' shelves, and the company has back orders for another 100.

However, the machine's problems are more deep-rooted, and Alan Frost, general manager for word processing at Philips has admitted that the company made a "pig's ear" of it in the market.

Engineering support for the machine is provided by different staff within the Philips organisation from that which supports the full-blown P5000 word processing systems to which the Satellite is supposed to transmit text. Neither camp admitted its machine was at fault and the problem of faulty minicassettes on which text is stored.

"It's pretty, but it doesn't work," said Rudiger Stubenrecht, editor of Textautomation, a German word processing publication.

John Rose, proprietor of an Oxford-based word processing bureau called Daily Information, also criticises the machine. "One cannot edit quickly enough on it. It takes two and a half minutes to wind back through 30 lines of poetry."

"Philips promotes it as an office machine for things like letters and mailing lists, but it is not much good for those applications particularly for lists and tables. What it is good for is bulk text entry for authors and for students writing theses."

Sita Sheer, an author and customer at Daily Information, complained: "I hired a Satellite one weekend and entered about 30 pages of text but was horrified to find that I had lost it all on the Monday when I tried to transfer the text to a P5000."

"I kept getting a message on the display which said 'Communications not established'. I tried about half-a-dozen other cassettes but they would not work," she said.

But Philips is ignoring the market for one-off bureau users and Frost explains that the Satellite is targeted at companies which have P5000 systems which are likely to have under-utilised peripherals.

Burroughs counter-sued for \$85m

by Kevan Pearson

IBIS Systems, the US disc manufacturer at the centre of a \$20 million legal wrangle with Burroughs, is to counter-sue the company, and is asking for up to \$85 million in damages.

IBS claims that Burroughs did not fully investigate its case before alleging that IBS stole proprietary information from Burroughs to make its large scale disc systems.

IBS also claims that Burroughs, which last year acquired IBM plug compatible disc manufacturer Memorex, is conspiring with Memorex to stop IBS competing in the IBM market.

The counter-suit calls Burroughs' action "predatory and unfair" and adds that it breaches US anti-trust legislation.

IBS is claiming \$25 million in compensation with an additional

\$10 million "exemplary damages". Under US anti-trust legislation compensation can be triple the amount originally claimed, hence the \$85 million figure.

Burroughs bases its claim on the fact that a substantial number of IBS' employees are former Burroughs' workers, including some of the senior management and technical people.

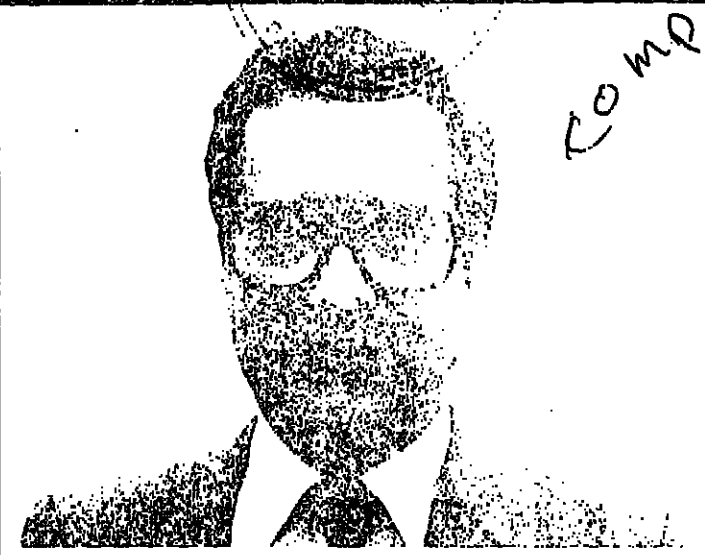
IBS contends that it did not need proprietary information to make its thin film products, and that neither Burroughs nor Memorex has actually announced a product based on the same technology.

IBS is taking a different route from the other disc manufacturers in its bid for the market. While the others, including IBM, are employing thin film heads and conventional discs, IBS claims to have

perfected a system using conventional heads and thin film discs capable of giving twice the storage capacity of IBM's 3380, up to 5 gigabytes.

The latest case is the second IBS has faced since it announced its products in April 1982. In July the company settled out of court with Storage Technology, another major IBM compatible disc supplier. STC alleged that its employees, who form a substantial part of IBS' workforce, took trade secrets with them when they left to join IBS.

IBS agreed to pay STC an undisclosed sum in settlement, and undertook not to recruit STC people unless they had left the company more than six months before IBS' approach.



GAMBHIR... IBM encouraging users to move up to 32 Mbytes.

Intersil feels the pinch of IBM price cuts

by Boris Sedacca

IBM has put the squeeze on US semiconductor house Intersil and its plug-compatible memory clients with its own add-on memory price cuts.

Intersil supplies memory chips to the major plug-compatible manufacturers including Storage Technology, Memorex and Control Data, and unless it is now prepared to drop its prices some will no longer be able to compete in the market.

"IBM's 3033 memory price reductions finally bring it in line with the cost of memory on the new 308X range of processors. It will be an added incentive for customers to upgrade their systems as full back-up to the larger memory capacity 308X machines at sites with multiple processors," said Suman Gambhir, European product marketing manager at Storage Technology.

Storage Technology has been selling add-on memory upgrades for the 3033 to such users of up to

32 Mbytes. "IBM is now encouraging users to move right up to 32 Mbyte installations," Gambhir said.

IBM uses older 4K chips for 3033 processors and 16K chips packaged back-to-back in four on the 308X processors, whereas Storage Technology was up to now able to undercut IBM by using 64K chips from Intersil.

Another Intersil PCM memory supplier, Memorex, intends to stay in the market, according to a spokesman.

Colin Keighley, regional manager of the OEM and peripheral products division of Control Data added that his company was expecting IBM's price cuts, "but not so soon and not so severe."

'WPs speed town hall work by up to 500%' - report

by Nicholas Entiknap

WORD processors can streamline clerical work by between 20% and 500% according to the UK's new study.

That is the conclusion of a report from Lamarc (Local Authorities Management Service and Computer Committee) published last week.

But the increased efficiency achieved with word processing varies by application: a figure of 300% is quoted for large mail and reports and 200% for repetitive letters.

The 44-page Lamarc study summarises the experiences of 18 local authorities, of which 79% use word processors and further 14% considering the idea.

The findings have been digested and summarised in sections of manpower and industrial relations implications, technical and economic implications, and technology convergence. These are interesting, but perhaps the greatest value will be derived from the 21 case histories which form the bulk of the book.

These are presented in a standard format, and describe the experience of each authority in the place of word processing, the type of word processing, and the number of staff involved.

"Word processing applications in government 1982, available from HMSO, Vincent House, Vincent Square, London SW1P 2NB. Tel: 01-828 2335. Price £1.50 to local authorities."

From £39 per month inc. maint.
Ex Stock VT101
MBS Rentals
Tel: (07535) 55211



HARE... BBC ordered networks as part of 'Office of Future'.

Racal steps forward with local micro net

by Boris Sedacca

RACAL'S plans for the office of the future took a step forward with the launch last week of its own low-speed local network for its microcomputers. Earlier this year Racal released Planet, a medium-speed proprietary LAN.

The new product, Sharenet, will accept up to 25 workstations from an unlimited number of access points on a maximum cable length of 500 metres, using simple twisted-pair telephone cable in triples.

The system is only for use with Racal's Series 6000 micros, launched last July as standalone machines, but may be connected eventually to Racal-Milgo's Planet network through a gateway node.

Peter Hare, director of Racal Information Systems, said: "We pre-released the system to custom-

ers in April and have orders for 18 networks so far, some of which are existing Series 6000 users."

"The BBC has orders in for eight networks and a total of 48 workstations, worth around £250,000, as part of the Department of Information's 'Office of the Future' scheme," he added.

The first system was delivered last week to Eastleigh College of Technology, and the second will go to another college of technology in the South, for use in training students on office automation.

A file management system has been developed which maintains compatibility with the CP/M microcomputer operating system. Users can also share peripherals such as printers and disc drives, and are able to store and handle electronic messages with automatic date and time stamp.

Suppliers slam DEC over distribution

by John Kavanagh

UK terminal suppliers have slammed Digital Equipment Corporation's authorised distributor programme just seven months after it was launched to bring order to the market.

Authorised distributors say they are being undercut by suppliers which are outside the scheme - and facing competition from DEC itself.

DEC has admitted some of the charges but has hit back, saying the distributors have not given the programme time to sort itself out.

One complaint is that DEC has continued to sell terminals to unauthorised distributors even after the programme was introduced. Some suppliers put in big orders just before the five official distributors were named.

As a result they have been taking delivery of terminals at the prices at which they ordered them at the start of the year. Yet an authorised distributor ordering over shorter periods has to pay any price increases which have been introduced.

"We've actually bought terminals from an unauthorised distributor more cheaply than from DEC," said Terry Walker, managing director of Abacus Electronics, one of the five authorised terminal distributors.

"In addition DEC has been competing with us on one-off sales. But they said they would refer orders for under 200 termi-

nals to the distributors. That's standard practice. "We've been waiting for some time to hear how DEC is going to sort this out. In the meantime Rome is burning."

At another authorised distributor, MBS Rentals, the rentals sales manager, Philip Ely, said DEC had made "several blunders". "We've had six price changes and there has been some strange disparity between what we pay and the prices DEC charges end users," he said.

John McLean, managing director of Zygal Dynamics, said he was not prepared to talk about the matter because the company was discussing its position with DEC. "It's true to say the programme is not working as well as we had hoped," he said.

But DEC was confident the programme was on the right track. Edgar Valentine, lead of the terminal programme, said the long-term contracts with unauthorised distributors had expired in June and the company would not take further business.

"Some of the non-authorised suppliers did quite a lot of damage by selling terminals cheaply at the end of their contracts," he said.

On the handling of small orders from users, Valentine said this was a grey area. "We made it clear to the distributors that we would make exceptions with certain customers. In any case this applies in very few instances."

Valentine said price changes

were normal in the distribution business. "We react quickly to competitive situations and there have been minor inconsistencies," he said. "But I'm surprised there is a complaint."

Valentine added, "We've gone through some rough water but we expected it because this is a dramatic change in distribution. We're on the edge of it now. I think everyone will have a happy Christmas."

Meanwhile, companies which did not make DEC's official list are still campaigning for inclusion. Dave Sargeant, distribution manager at Midtronics, said DEC did not even need five distributors - but Midtronics was still fighting for recognition. "We were very disappointed at being left out, because we were the first DEC reseller in the UK, back in 1976," he added.

But Valentine said DEC had no plans to add to the distributor list.

● DEC faces damages claims of £10 million from Darkcrest, the UK systems house which it has taken to the High Court with software piracy allegations. And Darkcrest's managing director, Nick Brackenbury, said the outcome of the lawsuit could have worldwide implications for the resale of systems with the equipment manufacturer's software. "It appears DEC says we have no right to do this even when we have bought and paid for a licence," he said.

Things looked rosy for the Colorado-based company one year ago when its shares were being traded at around \$40 on Wall Street, but the fall from grace was swift, with prices dropping to around \$16 before picking up again to around \$20 following a new financial restructuring package which includes a \$25 million debenture repurchase.

The company also dropped two ambitious product developments, Visual Storage System and a high-speed laser printer.

Computer Output Microfiche

Save paper, space, distribution costs, retrieval time etc
Telephone 01-689 2244

LA
Milton House,
Milton Road,
Troyton
CB9 2XG

Jobs begin to be lost at Storage Tech

by Boris Sedacca

STAFF cutbacks are starting at Storage Technology, a leading manufacturer of IBM plug-compatible peripherals.

Storage Technology's UK subsidiary has made six staff redundant and another six are to follow soon.

These moves follow a management reshuffle at Storage Technology about three months ago when Derek Thompson took over as managing director of the UK operation from Colin Cook. Previously in charge of European operations for Storage Technology, Thompson came into the company when it acquired plug-compatible printer manufacturer Decumation.

"Prior to the merger in January 1981, both companies had about 50 employees each, and staff more than doubled over the last year to 220, but we have taken steps now to appraise their performance where we have over-recruited."

"We have decided to do it during this third quarter of 1982, rather than leaving it to the end of the year. The total number made redundant will probably end up as 12 people," he said.

Things looked rosy for the Colorado-based company one year ago when its shares were being traded at around \$40 on Wall Street, but the fall from grace was swift, with prices dropping to around \$16 before picking up again to around \$20 following a new financial restructuring package which includes a \$25 million debenture repurchase.

The company also dropped two ambitious product developments, Visual Storage System and a high-speed laser printer.

North Cheshire College

Q. Where will the qualified teachers of computing for the next generation come from?

A. Many will come from our B.Ed. Computers and Industrial Society Course.

On the course we need people with lively minds and a commitment to the needs of the future.

For advice and further details contact:-

Admissions Tutor (CW)
North Cheshire College
Padgate Campus, Fearnhead Lane
Warrington WA2 0DB
Phone: Padgate 814343, Extension 'C'

'Dozens of enquiries' to buy Modular technology

by Boris Sedacca

ENQUIRIES are flooding in from computer companies eager to buy up the cash-strapped data communications manufacturer, Modular Technology.

"We have had dozens of enquiries," said Stephen Rout, receiver's assistant at accountancy firm Chater and Myhill. "We are in the middle of a number of negotiations and we are now waiting for formal offers."

Rout is optimistic about selling Modular Technology, founded by consultant John McNulty, as a going concern to another company within the computer industry. "We are hoping to sell the business of the company but we will have to consider other alternatives if these enquiries all fall through," he said.

Birmingham-based Peripheral Hardware, an OEM and terminals vendor, is one of the contenders. Modular Technology went into the receiver's hands on July 29 after being called in by the company's financial backers.

McNULTY... Founder of firm.

Computer financing
Standbrook House, 2-5 Old Bond Street London W1X 3TB

AVAILABLE
3083 J.24
AUGUST 1983

TELEPHONE 01 409 2388 TELFAX 8954724

TEK 4112

Smart users are buying the 4112 Intelligent Graphics Terminal...

It's not surprising at the NEW low cost of £5782 (subject to US\$ exchange rate).

Be smart and ask for complete information on our 4100 Series Intelligent Graphics Terminals.

Telephone now for your free literature.
Midvale Rd. 73241 Harpenden Herts AL5 2JN
Livingston 32766 Manchester M20 9JH
Dublin 01-60695/850795

Tektronix

Printed in Great Britain by QB Limited, Shepperton Place, Colchester, Essex CO3 3LP and published by IPC Electronic Press Ltd., Quadrant, Sutton, Surrey SM2 5AS.

Denied Swansea, ICL lands £15m US order

by Kevin Cahill

SMARTING under its inability to tender for the mainframe element of the DVLC contract, ICL today announced confirmation of a £15 million order in the US.

The order, ICL's biggest yet from an overseas customer, is for terminals for the State of New York social services department and is worth up to three times more than the mainframe element of the DVLC contract on which ICL was unable to bid to replace its own machines.

The Treasury, acting on behalf of the Central Computer and Tele-

communications Authority, announced the shortlist in the selective tender for three parts of the Swansea Centre contract so far made public.

According to the Treasury spokesman, the total value of the equipment requested for tender is £16 million.

The first part of the tender, for the mainframe and integrated input procedures machinery to replace the ageing ICL System 4, has been shortlisted to IBM and Honeywell, both US manufacturers with factories in this country.

IBM has taken a very tough

stance over the Swansea centre order, putting out a statement earlier this year clearly indicating that it would challenge any attempt by the government to give the contract to ICL.

The original order for Swansea was awarded to ICL on a single tender basis, but under BEC and General Agreement on Trade and Tariff rules, to which the UK government is now a signatory, all tenders for government computers other than those connected with national security must go to public tender.

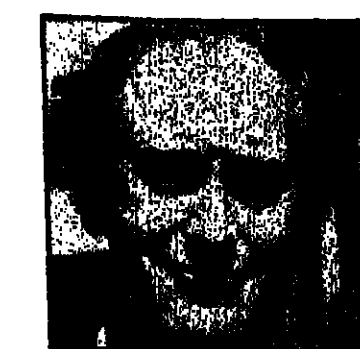
In this case the planning mis-

takes of five years ago at ICL came home to roost with a vengeance. ICL, by its own admission, was unable to submit a tender because it cannot provide a machine for test by the end of 1983.

The requirement is for the tendering companies to provide their tendered equipment for test in the middle of next year and start delivering it for installation by the end of the year, with completion of the full installation by 1987.

ICL wanted to offer the 5-6-MIP Batriel but cannot provide a machine until 1985.

■ Turn to page 6



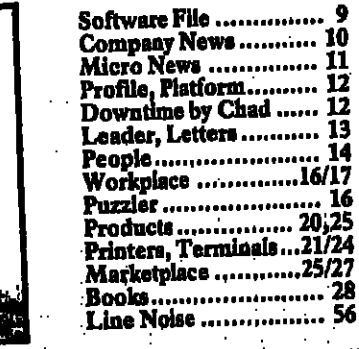
Computer site will be under a garden16/17



Printers and terminals feature21/24



Memorex seeks IBM 4300 base3



Jobs.....30/55
Top Jobs32

RAPPORT

The proven Relational Database System for VAX and PRIME

and over 28 other mainframe and mini computers. Also MICRO RAPPORT is available for micro computers.

RAPPORT is the proven system because -

- it is used at more than 120 installations worldwide
- it has been used commercially for three years
- it is used for both small and large databases
- it is used in business, industry, government and research
- applications include computer aided design, stock control, time sheet analysis, financial management, project management, personnel administration, literary referencing, scientific data analysis and many more.

RAPPORT can be used by Fortran, Cobol or Coral application programs or by using its own powerful Interactive Query Language for report formatting, data acceptance and update, and answering ad hoc queries.

RAPPORT gives the power of traditional database systems with the benefits of the new Relational approach to data management - an essential aid to application development.

For more information on a demonstration please contact:
Francis & Taylor
Data Products Group
Logix Limited, 21 Newman Street
London W1A 1BB
Telephone 01-837 8111

logica

* VAX is a trademark of Digital Equipment Corporation

Govt promises simpler telecoms approvals

CONSIDERABLE criticism of the government's new network attachment approval procedures has come from the data processing industry, according to John Compton, of the Department of Industry.

Compton, who has headed the DoI team overseeing the introduction of new approval procedures, said that equipment that would be indirectly attached to public networks, for example via a modem, was often difficult to subject to independent appraisal because it was software driven and too complex to write simple standards for.

The government accepted the criticism, he said, and was devoting considerable effort to reducing the criteria for approval to the minimum and simplifying the procedures for getting it.

Speaking at the session on regulation and public policy at last week's ICC82 session in London, he added that not much progress on attachment liberalisation was visible one year after the British Telecommunications Act took effect.

But detailed preparation had been made for future independent

approval procedures.

Contrary to the opinions voiced by many, British Telecom's monopoly was not ended overnight by the Act. Rather it gave the government the power to dismantle nearly all of it. The government had made clear in 1980 that this would be done step by step over three years.

THE International Conference on Computer Communications has been held biennially since 1972 and this year, the first to be held in the UK, attracted 1,600 delegates from many countries.

It is the main international forum for discussions between members of the computer and telecommunications industries.

Programme committee chairman Professor Sandy Douglas of the London School of Economics said it was the only umbrella under which IBM and AT&T could talk to each other on scientific topics. Donald Kennett reports.

However, standards were to be published this week and the whole thing would get under way. The supply of new apparatus would grow if not to a flood then to a substantial stream. They were aimed predominantly at telephony on the public network, because that was where the monopoly had been strongest.

The monopoly on other attach-

ments had been dismantled voluntarily before the Act.

The range of modems that could be approved was now unrestricted and it was also now possible for manufacturers to seek approval for cordless telephones.

It was argued that indirect attachments should be left to the control of market forces. But mar-

ket forces had not stopped industry poisoning workers or causing acid rain, so they were unlikely to be effective in this case. The government was still worried that chaos could be caused on the network by unrestricted interworking. The DoI's task was to balance the public good against complex, laborious and expensive approval procedures, he said.

Telecom would provide the interface on a translation service. Then others could take it up for their networks and services. "Inconsistency doesn't help the user who simply wants to access a few databases and execute a few programs that happen to be on different computers," he said.

The user wants to use the services as tools in his job. He is not interested in how the job is done, he just wants the results."

He was confident that within 12 months the monopoly would be effectively ended except for some small details like provision of the first instrument on each subscriber's line.

Speaking in the same session, Logica chairman Philip Hughes tried to redress the imbalance of arguments about liberalisation by listing some disadvantages which he said, are usually only mentioned by BT and its unions and thus suspected of being mere self-justification.

It was important to realise the political point that an attack on the monopoly was an attack on public ownership. Underlying the restructuring of telecommunications were the wider political questions about private enterprise and market forces. There was a drift to the political right almost everywhere except France that was dictating what was happening.

COMPUTER and communications professionals must avoid being parochial in their consideration of the social consequences of progress in their field. So said Exeter University pro-chancellor and retired Post Office director Murray Laver in a lively and amusing introductory paper.

Laver warned against thinking that we were experiencing the unique point at which computing, communications and microelectronics were combining synergistically.

"It is far more likely that the future holds much more change and much faster change than we have yet experienced," he said. Thinking otherwise would lead us to take hasty action to deal with what we regarded as a once-for-all crisis.

We must not let the tail of the past wag the dog of the future, he added. He illustrated the point graphically with a drawing showing the line of exponential growth going up the back of a seated dog, coming from the tail which lay almost flat along the ground. The present time was at the base of the

Laver warns against industry parochialism

tail, he suggested, and then nothing in sight that was likely to curtail the growth of future technology.

The intellectual parochialism ever-narrowing specialisation caused hardware and software designers to think they could be considered of the social and economic consequences of their work to social scientists. They do trespass outside their own territory because it was allegedly not be shown to be naive.

We should recognise that neither precision nor control should be expected of our work at policy-making. But we should formulate some principles of sign that ensured the path would be adapted to people rather than the other way around.

We should avoid being too into thinking that quantitative information and programmatic operations were inherently superior to the qualitative information and non-programmatic methods we used all the time. We should identify the different groups we seek to influence and tailor our message accordingly.

Strategy helps users weed out useless info

IMPLEMENTORS of office systems need a strategy to help them see their way through a mass of unhelpful information in the marketplace, according to Clive Tristram of BL Systems.

Tristram told ICC82 delegates that this strategy should focus on organisational needs rather than the features of available systems. Users did not want to know about the systems, he said, they wanted to get on with their jobs. In his company's case that was making cars economically.

"Our strategy would be to follow an evolutionary path, building on previous successes," he said. "We wouldn't carry on up a path where we had a failure. We would identify areas of work that were crucial to the success of the company and where small amounts of investment could produce large benefits."

The emphasis should be on productivity and job effectiveness, the implementor should consider how to get a critical mass of people per system and systems per user to make the systems worth using.

Where people were used to change or to group work, they would find it very difficult to change to an office automation system. Rather than forcing such a fundamental change on them, small changes should be made just to get them used to change first.

Another speaker in the office systems session, Richard Clark of Joans de Smith Systems, said users should be involved in the process. Micros had been able to get off because there were games available for them.

With office systems, users should feel they did something for them even if it was not a direct benefit to the company at first.



KITCHING... "The small end of IBM knows that Memorex has arrived as an alternative."

Computer is 'free', you pay for the software

by Robert Parry
NEWCOMER to the British microcomputer scene Information and Technology Computer Services (ITCS), has hit on a new way to distribute its UK-built hardware. It is giving it away on loan.

There is a catch of course - there is no such thing as a free computer - you have to buy the software and pay a maintenance charge. But when the price comes out at as little as £1,995 plus £500 a year service charge for a twin 500K floppy drive computer, complete with CP/M operating system and a suite of business application software, the catch does not seem that bad.

ITCS set out last December to sell total systems from the very start, says managing director David Lewis-Pryce, and is now ready to launch its range. Lewis-Pryce aims to redress the balance in the UK market, where US and Japanese machines have swamped home-grown microcomputers.

He intends to do this with the six Andromeda variants - Alfa, Vita, Gamma, Theta, Epsilon and Zeta - which span a range of floppy and hard disc capacities and video monitor sizes. The range also includes a portable version

which Lewis-Pryce claimed last month would topple Osborne from its dominance in the portable computer market.

Hardware is all built in Britain, using British components wherever possible, says Lewis-Pryce. He uses between 30 and 40 different companies as sub-contractors, partly in an attempt to guard against the supply problems that have plagued many UK micro makers lately.

Basic versions of each Andromeda model, and all five of the bottom-of-the-range Alfa, can be bought outright by end users. They come with varying numbers of applications packages, building up from a minimum of Lexicom-1 word processing and Trendisc data management software to a suite including financial modelling software and integrated accounting packages from Sapphire Systems.

Maintenance contracts available for all systems, and required for the more upmarket models that are provided on the basis of buy the software and borrow the hardware, include a four-hour response time and 24-hour replacement in the event of problems.

The first year's software upgrade costs are also included. After the first year, update charges are £25 per package per year.



MITTERRAND... criticised.

Mitterrand slated over terror file

by Jack Gee
FRANCE's national Commission for Data Processing and Liberty, the CNIL, has taken President Mitterrand to task for announcing the creation of a databank file of terrorists without seeking its permission as demanded by law.

The 1978 Act of Parliament which established the CNIL and endowed it with the wide-ranging watchdog powers over databanks requires that the State must consult it before creating computer files. Only the Council of State, France's highest reviewing body for administrative decisions, is empowered to reverse a negative decision by the CNIL.

In a massive media campaign to appease public opinion after the shock of the massacre in which 17 people died in a Jewish restaurant in Paris in August, Mitterrand went on TV to announce that a databank has been set up three months earlier in order to combat terrorism.

Reacting to Mitterrand's announcement after several weeks' silence, the CNIL's president, Senator Jacques Thyrard, a Conservative opposition politician appointed by the last government, said: "I am shocked by the idea that France would benefit from having a databank similar to that of West Germany's criminal police, the BKA."

"If that happened there would no longer be any point in having a National Commission for Data Processing and Liberty, and at all events, the 1978 law setting up the CNIL would have to be changed."

Memorex hunts IBM 4300 base

LAST to announce, first to deliver. That is the claim of Memorex, which last week made a series of thin film head disc storage and tape drive announcements which strike at the heart of IBM's user base.

As well as a thin film head mass storage drive to compete with IBM's long delayed 3380, Memorex is offering a new option to IBM's small-end users. "The small end of IBM knows that Memorex has arrived as an alternative," said Mike Kitching, managing director of Memorex UK, who termed the product announcements as the most significant in his six years' tenure as head of the UK operation.

Memorex says it is the first plug compatible manufacturer to deliver production level units based on internally developed thin film read/write heads.

While Memorex's new 1.26 gigabyte 3680 drive - which will be delivered early next year just 12 months after IBM's own 3380 disc storage system - looks the more eye-catching of the new products,

the disc and tape drives for the small and medium 4300 user could be the more significant.

Kitching says there are twice the number of 4300 installations as all other mainframes put together. The two new products for the 4300 - the 571.3 Mbyte 3690 disc subsystem and the 3260 tape drive - are the first in a line of announcements which will make clear Memorex's strategy for the Eighties.

Kitching estimates that Memorex will be able to offer the 4300 user an alternative for 55% of hardware costs. First delivery of the 3690 in the UK went to Marthon International in London this month, and a number of units have been installed in Japan. The first 3260 is going into CPC in Isler.

Memorex has long emphasised its intention to supply a plug compatible equivalent to IBM's 3380 mass storage drive. That the company has already installed the 3690 disc system, which Kitching says uses the same thin film technology which has given IBM so many problems, gives credence to

Memorex's claim that deliveries of the 3680 will begin as scheduled next year.

US deliveries will start in the first quarter, UK deliveries in the second, with an OEM product, the 680, to be available at the same time.

The 3680 does not use thin film media - it uses advance particulate media, and the next step once it is on the market is likely to be a double density version.

Price of the 3680 will be slightly below IBM's 3380. Kitching says he is taking orders now, and while he hasn't released a UK price list, he will guarantee delivery prices at no higher than IBM's.

Kitching adds that he has "absolutely no doubt" that there will still be a shortage of 3380s in 12 months' time.

With 1.26 gigabyte storage capacity per module, the 3680 subsystem offers up to 10.08 gigabytes per eight spindle string. Average access time is 10 milliseconds, and the data transfer rate is three Mbytes per second.

Decentralised job scheduling to help users of large IBM networks

by Robert Parry
USERS of large IBM networks are to be offered an automated scheduling system that can cope with decentralised job scheduling. Cambridge Systems Group's ADC2 software allows separate schedules for remote sites to be set up and tied together into a master schedule for the central mainframe - the first time that such a product is available, claims CSG president Shawn McLaren.

He sees the feature, with master and subsidiary schedules, as all working properly together, as particularly important for users like oil companies, which McLaren claims are sticking with manual systems rather than moving to an automated system that cannot handle decentralised scheduling.

ADC2 joins two other products from the California-based supplier of mainframe system software: ACF2 data security and AS/400 data management software. It runs under IBM's MVS operating system, and will slot in with the other products to give a streamlined system.

But the main feature CSG is pushing, apart from the decentralised scheduling, is the ease with which initial scheduling can be set.

"You need to define a whole lot less to get started," says McLaren. "Setting up a null schedule allows you to get the job history on everything that runs, and you can start

scheduling right away. You can get systems going in weeks to months rather than months to years," he claims.

About 25 systems have been installed so far in the US, and McLaren reckons the CSG name will give the product respectability and marketing clout.



McLAREN... The CSG name gives respectability and marketing clout.

International shakeup in banking

by John Kavanagh
and Howard Kanten
A BIG shake-up has started in self-service banking in the UK, US and Italy.

Two leading UK banks, National Westminster and Midland, are enabling each other's customers to use their cash dispensers. In Italy the major banks are setting up a network of cash dispensers which will be available to all customers.

And in the US Chemical Bank, customers can now do money transactions from their homes using personal computers linked to the bank's mainframe.

NaWest and Midland say their plan will create the biggest auto-teller machine network in Europe. By the end of 1983 NaWest will have 1,000 machines and Midland 750.

Both banks insist the move will not close branches, even though they are near each other in many areas. But the Banking, Finance and Insurance Union says the plan is part of an overall aim to cut staff through automation.

response to Barclays' Saturday morning opening because of our policy on Saturday working," said Bill Penney of BIFU's Midland branch. "But as customers get used to auto-tellers there could be a dramatic effect on jobs."

Both banks have NCR auto-tellers. The banks will have their own machines online to their own computers, as at present, but offline to each other's. This means customers using their own bank's machines will be able to use extra services such as getting account balances, while the other bank's customers will only be able to draw cash. There will be no charge for the service.

Transactions from the other bank's customers will be passed over on magnetic tape.

Barclays has the possibility of joining the scheme because it too has a standardised NCR machine. Lloyd's also has IBM machines, but is moving to auto-teller machines for the first time - and in a big way. Over 150 commercial and savings banks are setting up a network of 1,000 Olivetti auto-

tellers. They are also considering links between their computers for electronic cheque clearing.

Italians depend on cash because cheque and credit cards are treated with suspicion outside tourist centres. Yet they have to carry a lot of lire because they cannot be assured of finding a branch of their bank in every town: even the biggest banks have under 500 branches.

In the US, bank branches could become a thing of the past with the arrival of armchair banking. Chemical Bank customers will soon be able to use Atrial personal computers to check their bank balances, transfer funds between accounts and pay bills to shops, public utilities and credit card companies in the New York area.

And Shawmut Bank in Massachusetts is looking for home computer users to follow suit with a pilot home-banking plan. Other US banks are believed to be experimenting along these lines.

Chemical Bank's service will be offered to between 2,000 and 3,000 customers by the end of the year.

Wilkes Computing Retrographics for your VT100



- Buy complete or upgrade your VT100
- Manufactured by Digital Engineering.
- Tektronix 4010 software compatible.
- Vector drawing.
- Point plotting capability.
- Selective erase.
- Alphanumeric overlay.
- Raster scan technology.
- Green phosphor screen.
- Compatibility with industry standard software.
- Tektronix plot 10.
- Isaco's displa.
- Tellagraf.
- Retains all VT100 standard features.

Wilkes Computing
Bush House, 72 Prince Street, Bristol BS1 4HU
Tel (0272) 25921, Telex 449205

MOS chips '100 times faster by late 1980s'

BELL LABS' president Dr Ian Ross said at the sixth International Conference on Computer Communication that the progress of the last decade, during which the number of components that could be put on a single chip had doubled every year, would continue.

From this year's 600,000 components giving 256 Kbit storage locations, we would go on to see 4 Mbit capacities in the late 1980s. By that time, MOS chips would be 100 times faster than today's and gallium arsenide chips far faster.

Since 40% of chip manufacturers' costs lay in the silicon part, this kind of progress was worthwhile, he said. But it was not enough on its own.

Reliability and usability were essential so that systems became universally acceptable and were put to widespread and productive

use. The success of trains, cars and aeroplanes had depended on their man-machine interfaces, he said.

"We need systems that people can use with ease and confidence," he added. "Only then will we be on the pathway to the information society."

By 1990 chip components would be as compact as their equivalents in the human brain and by the end of the century a briefcase-sized computer would have capabilities equal to those of the brain, such as storing 20 million facts and dissipate 20 milliwatts. However, the brain operated through the interconnection of slow, small, but specialised processors.

The computer industry had already learned to trade simplicity for speed. Maybe the way forward was through developing inter-processor communications.

Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 6AS. Telex: 892084 BISPRS G

EDITORIAL		DISPLAY ADVERTISING		CLASSIFIED ADVERTISING		CIRCULATION	
Inquiries: 01-861 8622/8641		Advertisement Manager		Group Advertisement Manager		Terms of circulation	
Editor: David Craver		Chris Hutton		Group Advertisement Manager		Computer Weekly is sent free of charge to all	
Deputy Editor: Ron Gosses		Sales Development Manager		CONSULTANTS SALES		existing categories in the UK only. Companies	
Financial Editor: Kevin O'Hall		01-861 2122		Assistant Manager		not in the UK only. Companies not in the UK	
Editor: Kevin O'Hall		01-861 2124		Sales Executives		service executives, civil servants, research	
Associate Editor: Boris Redwood		01-861 2126		Sales Executives		executives, civil servants, research	
Software Editor: Chris Gooding		01-861 2128		Sales Executives		executives, civil servants, research	
Micro Editor: Robert Perry		01-861 2130		Sales Executives		executives, civil servants, research	
Reporters: Kevin Pearson, Donald MacIntyre, Philip Hunter, Andrew Thomas, Nigel MacLennan, Sarah Mansfield		01-861 2132		Sales Executives		executives, civil servants, research	
Chief Sub-editor: John Mansfield		01-861 2134		Sales Executives		executives, civil servants, research	
Deputy Chief Sub-editor: Nancy Pocock		01-861 2136		Sales Executives		executives, civil servants, research	
Sub-editor: Julia Gattelli		01-861 2138		Sales Executives		executives, civil servants, research	
		01-861 2140		Sales Executives		executives, civil servants, research	
		01-861 2142		Sales Executives		executives, civil servants, research	
		01-861 2144		Sales Executives		executives, civil servants, research	
		01-861 2146		Sales Executives		executives, civil servants, research	
		01-861 2148		Sales Executives		executives, civil servants, research	
		01-861 2150		Sales Executives		executives, civil servants, research	
		01-861 2152		Sales Executives		executives, civil servants, research	
		01-861 2154		Sales Executives		executives, civil servants, research	
		01-861 2156		Sales Executives		executives, civil servants, research	
		01-861 2158		Sales Executives		executives, civil servants, research	
		01-861 2160		Sales Executives		executives, civil servants, research	
		01-861 2162		Sales Executives		executives, civil servants, research	
		01-861 2164		Sales Executives		executives, civil servants, research	
		01-861 2166		Sales Executives		executives, civil servants, research	
		01-861 2168		Sales Executives		executives, civil servants, research	
		01-861 2170		Sales Executives		executives, civil servants, research	
		01-861 2172		Sales Executives		executives, civil servants, research	
		01-861 2174		Sales Executives		executives, civil servants, research	
		01-861 2176		Sales Executives		executives, civil servants, research	
		01-861 2178		Sales Executives		executives, civil servants, research	
		01-861 2180		Sales Executives		executives, civil servants, research	
		01-861 2182		Sales Executives		executives, civil servants, research	
		01-861 2184		Sales Executives		executives, civil servants, research	
		01-861 2186		Sales Executives		executives, civil servants, research	
		01-861 2188		Sales Executives		executives, civil servants, research	
		01-861 2190		Sales Executives		executives, civil servants, research	
		01-861 2192		Sales Executives		executives, civil servants, research	
		01-861 2194		Sales Executives		executives, civil servants, research	
		01-861 2196		Sales Executives		executives, civil servants, research	
		01-861 2198		Sales Executives		executives, civil servants, research	
		01-861 2200		Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	
				Sales Executives		executives, civil servants, research	

'IBM turnover \$100bn by 1990'

by Boris Sedacca

IBM will quadruple in size to become a \$100 billion organisation by 1990, according to one optimistic forecast.

By the year 2000, IBM will have a world-wide turnover of \$300 billion and will have become a consumer products manufacturer, according to a report* by market research analysts Strategic Inc.

These events will take place over four "strategic periods", starting with the distributed processing strategy from 1981 to 1986, based on the 308X mainframe series Extended Architecture and remote 4300s.

This will then be followed by the office automation strategy from 1986 to 1990, which will be based on Systems Network Architecture and characterised by vertical marketing programmes, voice products and low-cost optical character recognition devices.

The period from 1991 to 1995

will see IBM moving into its communications strategy, followed by its entry into the consumer products market. The Strategic report describes the IBM Personal Computer as "a big market research project".

"IBM wants to triple its turnover from \$100 billion to \$300 billion in the 1990s, and therefore cannot ignore this market," says the report, indicating that these periods all add up to one grand IBM strategy - the Information Age.

But IBM has to iron out certain problems to reach its goals, cautions the report. "IBM professed that it encouraged 'wild ducks'. It is an in-house joke at IBM that it encouraged them as long as they flew in formation," it says.

In a time of change, IBM needs wild ducks and one of the ways to recapture and recycle some of them would be to organise an IBM venture capital fund. This would

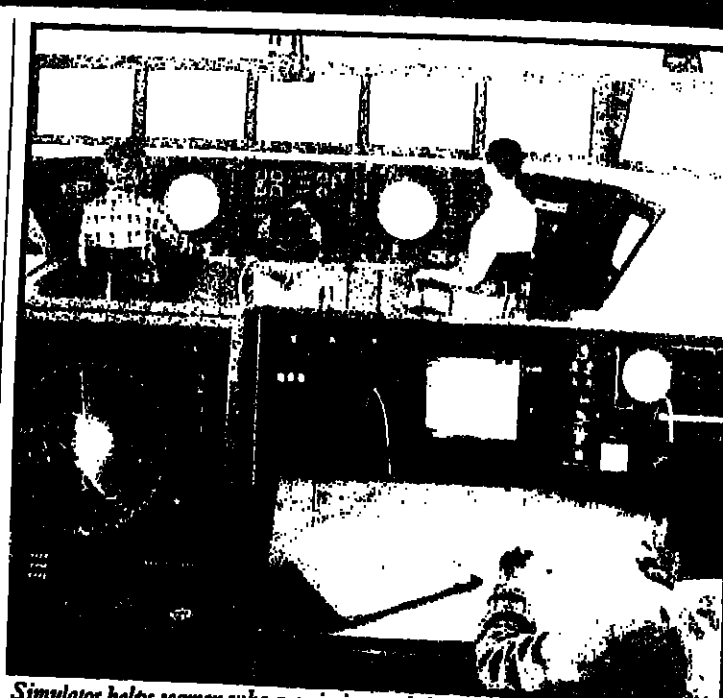
provide IBM with the flexibility to enter new markets at an early stage, develop new technologies and provide different types of rewards and working environments from those normally associated with the company.

Another problem perceived by Strategic is IBM thermal conduction module technology used on the 308X series, which it describes as a "technology trap".

"This is a very expensive approach, requiring special tooling for manufacturing and maintenance. Although the packaging is elegant, it is expensive, and TCM pushes the state of the packaging art beyond its economic limits. Simply stated, there are cheaper ways to solve the problem."

Nobody at Strategic was in a position to substantiate this assertion when we went to press.

*IBM - The Key Issues, Strategic Inc. Available from IPI, 134 Holland Park Avenue, London W11 4UE. £895.00.



Simulator helps seamen who are aiming at their master's certificate.

Trainees sail a PDP-11

by John Kavanagh
SUSAN is doing her bit for sailors in Hamburg. For Susan is a £3 million ship handling and navigation simulator giving practical training to Hamburg Polytechnic students aiming at a master's certificate. And it is claimed by its

manufacturer, the Krupp engineering group, to be the world's most sophisticated system of its kind.

Susan is built around a Digital Equipment PDP-11/60 minicomputer linked to six Krupp process control computers, one of which controls 11 projectors presenting what is happening in the "sea lanes" outside the "bridge".

For extra realism a hydraulic system under the bridge produces suitable pitch and roll motions.

The system holds descriptions of different types of vessel and navigation and manoeuvring situations, which can be called in through a keyboard.

For example, the trainee captain and navigator can take a container ship from German Bight to Hamburg, mooring and casting off with or without help from tugs. Poor visibility, currents, wind, other traffic and other conditions can be generated to test students.

Krupp says the rapid growth of sea traffic and the increasing size and speed of vessels have led to shortages of seamen with ship handling experience. Krupp says that the simulator eliminates the need to let trainees loose on the high seas to get experience.

Rush is on for the new VAX

by John Kavanagh
DELIVERIES have started on Digital Equipment's new bottom-end 32-bit minicomputer, the VAX-11/730, launched in April.

The first machine in the UK has been delivered to systems house Coulson Heron Associates and DEC says well over 100 will be installed in the UK in the next six months.

CHA managing director Richard Coulson said his company already had three VAX-11/730 customers lined up. And CHA expects to take a second in-house system before the end of the year.

Coulson said the system was priced very attractively and had extremely low running costs. "A great part of our future will be tied up with the VAX," he said.

CHA is using the system for applications software development and for work on broadband networks. The company is one of DEC's 10 authorised computer distributors.

The VAX-11/730 provides 30% of the power of the original big VAX-11/780 at 20% of the price.

The low-end VAX is part of DEC's two-pronged attack on computer markets. At the other end of its computer products scale it is moving increasingly powerful versions of the PDP-11 architecture onto single microprocessor chips, and eventually will continue this process up to the VAX range.

When it does so, the VAX-11/730 is likely to be the first to appear on a single chip.

SALES BRIEF £330,000 contract for Hoskyns

WATER treatment specialist Houseman, maker of Pump water softeners, has placed a £330,000 order worth over £330,000 for software house Hoskyns for a control system based on a Data Equipment VAX-11/750 minicomputer. Hoskyns' MAS-M modular application system, for which over 2,000 elements have so far been implemented.

Blood records

HUDDERSFIELD Royal Infirmary has ordered a CTL £1 from Computer Technology to keep records on the 58,000 samples its haematology department handles each year. Data will be input from a Coulter 510 measurement and analysis machine via a CT Lab minicomputer.

Foundry system

BUTLER Foundries Group has placed a £60,000 order with MLI for a Basic Four 210 running in Cast production control and accounting system developed by foundries by Dewtec Group Systems of Birmingham. MLI Profit manufacturing systems are included in the order.

Mail order

NATIONWIDE Building Society is installing three Bell & Howl Aim System 7 computer-controlled mailing systems costing a total of £173,000. The system cut, fold and insert computer-generated documents into envelopes at a rate of up to 6,000 an hour, at additional material for each envelope from up to six hoppers batch the output by postal area.

Reed speed-up

REED paper group subsidiary Spicer-Cowan is investing £300,000 in an order processing and stock control system based on a Data General MV6000. The system will be accessed through VDUs in its Southern regional distribution centre and four sales offices, enabling orders to be despatched within 24 hours of receipt.

Steel design

BRITISH STEEL has ordered four graphics workstations from the UK subsidiary of Intergraph, together with Intergraph's IGDS design and drafting software and DMR5 database management system, for use with its own Digital Equipment PDP-11/70.

Key readers

PLANTIME, the Watford-based supplier of flexible working hours recording systems, has won a £40,000 order from Ferranti Computer Systems for 1,600 coded bar readers to control access to a large computer network from the VDU attached to it.

Riding high

UK SUBSIDIARY of Motorola Data Sciences has won an order for 60 terminals and nine printers for production control in TI Raleigh bicycle factory. They will be used with the company's IBM 3081 minis and 3031 mainframes.

Conspect check

CH-HONEYWELL BULL has helped the Swedish Ministry of Defence keep track of its conscription by supplying seven Bull medium-scale computers and terminals for use in the conscription board's regional offices. The systems were chosen for their access control features and logging capabilities, available at a low price.

Micro Computers....



....Macro Success!

If you would like to become a distributor of one of the most successful ranges of micro computer systems on the market.....Commit to Memory.

Memory Computers are a dynamic company marketing a comprehensive range of computer systems and services.

Memory distributors enjoy all the benefits and support associated with a fast selling range of quality products from a substantial international company.

If you would like to know more about becoming a Memory Distributor or would like to attend our forthcoming seminar on 14th October 1982, just contact Graham Barrett on 01-445 6614.

MEMORY COMPUTERS

Commit to Memory

Memory Computers (UK) Limited
Britannia House, 860 High Road, London N12 9RY Telephone: 01-445 6614

The Professional Solution

Logica VTS would like to introduce you to a personal computer well worth meeting.

A powerful 16-bit professional system with the quality, reliability and support you expect from Logica — a European Leader in Computing and Communications Technology.

Together with our successful Word Processor and Local Area Network, meet us on **STAND 703** at the **European Computer Trade Forum**, National Exhibition Centre Birmingham.

28th September-1st October.

Qualified dealers interested in the VTS Personal Computer please contact Adrian Noad.

logica vts

Logica VTS Limited
64 Newman Street, London W1A 4SE
Telephone 01 637 5171. Telex 27200.

Over 2,600 visitors meant success for Compec Scotland 82, held in Glasgow last week. Margaret Cameron reports

Canny buyers are not taken in by fancy talk

COMPEC Scotland 82 was held last week at Glasgow's City Hall. And the Scots are to have a return visit of the exhibition in just eight months' time, in May 1983 at the Kelvin Hall.

This is the first Compec Scotland and one of a growing number of regional Compecs in the UK, the first of which started last year in Manchester, Compec North. All are sponsored by Computer Weekly.

The second Compec North was held in June this year and a new exhibition, the first Compec Wales, will be held next March at Cardiff University. Compec exhibitions have been running for some years now, in London and Brussels.

The Scots gave evidence of a subtly different market from that of the smoother DP professionals in the South. "Money is tighter in Scotland" was the observation of many exhibitors.

But Master Systems sales manager Bob Taylor admitted they would never have ventured so far north if they had not believed there was a worthwhile market waiting to be wooed.

"The Scots are 'just looking', it seems, because the economic situation has hit them harder. Their biggest single excuse for not talking figures is lack of money, not lack of interest," he said.

With large Scottish customers at Scottish Gas and Strathclyde University, Master Systems already likes to be identified with the Scottish market and to this end, stacked up its stand with cans of Tarran Ale.

Rediffusion Computers, which has up to now relied on its 50-foot mobile marketing truck for its "missionary" work in Scotland, was one of those exhibiting at the first Scottish Compec.

At ICL's extensive triple-fronted stand, sales executives admitted Scots were far canny than

their English counterparts. One of them, Kelvin Nixon, said: "You have to work that bit harder to persuade the Scots buyer. He is not impressed with fancy talk or jargon. He wants to be dealt with intelligently but straightly."

Both ICL and Rediffusion felt compelled to take the opportunity of exhibiting at Compec Scotland because the annual Compec exhibition in London has such a good name.

One less enthusiastic exhibitor, sales executive Peter Andrews at the Northern Engineering Industries stand, found the national Compec exhibition hard to emulate. "Compec Scotland cannot be as successful as Compec because there are not enough DP professionals here."

"You must divide all UK statistics by a factor of 10 to apply them to Scotland," he said. But he added that there could be at least a couple of thousand Scottish com-



A market waiting to be wooed - "at least a couple of thousand will be buying this month."

panies whose managing directors had to make decisions this month alone on the purchase of at least £10,000 worth of computer equipment.

Tony Stewart, managing director of Keyboard Productivity, a Glasgow training company, said: "Scotland is really a country characterised more by small businesses. The DP market here is far

companies employing from 40 to 300 staff.

"Often there will be no DP professional or specialist in the company, so they have to look outside for training and consultancy advice. The exhibition has created great interest among the DP professionals there are in Scotland and it is nice to see that the big computer firms realise Britain doesn't stop at

Watford Junction.

"If only other computer companies would now and then give us a wee bit of time to get to know particular needs of Scotland, their sales trips up here would be very successful. Scots do not need to be treated as if they are growing from their own by being bamboozled with too many sales words."

New boss to shake up MDS

by John Kavanagh
AN ICL man has taken over with a bang at MDS Computer Systems (UK), part of the US distributed systems supplier Mohawk Data Sciences. After a month as managing director 36-year-old Gerry Meredith-Smith is planning new product pricing structures, a dealer network for small systems and the introduction of an identity card production system.

He has also created a public relations manager's job to spread the word about MDS, and has restored the Mohawk name to the company's letterheads.

In 15 years at ICL, Meredith-Smith moved from humble programmer to corporate strategy

planning executive reporting directly to Robb Wilnot, the managing director. At 22 he was put in charge of a trouble-shooting team following the birth of ICL and a year later became the company's youngest account manager and then the youngest regional sales manager.

He was headhunted by MDS to take over from Ray Skinner, who resigned to go into the recruitment business.

Meredith-Smith aims to quadruple MDS' turnover from the current £5.2 million over the next two years, partly by concentrating on big sales. He is thus looking at selling small systems through dealers, leaving MDS salesmen to



MEREDITH-SMITH... "We're one of the best-kept secrets."

tackle the company's traditional field: selling distributed systems to big-name companies.

MDS' US parent is opening the way to such a move by considering putting Digital Research's CP/M operating system on its smallest system, the Series 21/10. CP/M is virtually an industry standard system and there is a wealth of applications software available to CP/M users.

Meanwhile Meredith-Smith is looking at new pricing for MDS' Trivex range of IBM-compatible display terminals. At present the company offers no discounts.

New products in the pipeline include an electronic mail service and a system which produces plastic identity cards.

This system is made by a US firm, DEK, which was taken over by MDS.

UK launch of graphics system with word and data processing bonus

by Robert Parry
A MICROPROCESSOR-based computer graphics system with the added bonus of word and data processing capability through the ubiquitous CP/M micro operating system is about to reach the UK. Reading-based Sinrom Electronics has won exclusive UK distribution rights for the Beacon CAD/CAM and general graphics system from recent US start-up Florida Computer Graphics.

With the Beacon system, which can be used as a standalone workstation, a network of workstations or as an intelligent terminal to host mainframes, Sinrom is first aiming at skilled users in R&D departments - the traditional CAD/CAM graphics applications. But the growth market is seen as business information systems, where graphics displays are becoming essential in presentation of information.

David Moseley, sales manager at Sinrom Electronics, reckons the market for graphics systems will grow at 85% a year over the next four years, and that business in-

formation systems will be the largest market, worth about \$840 million in 1986.

Even if Sinrom's figures, an amalgam of predictions from various market research sources, prove optimistic, Moseley will not be too worried. "Half that predicted growth rate still gives you a healthy market to be in," he says.

The Beacon systems use numerous microprocessors, a 16-bit graphics processor built up from AMD bit slices and a Z80A administrator to carry out general purpose tasks aided by dedicated processors for keyboard and monitor functions. The operating system used is called FCGOS, which is CP/M-compatible.

Users can choose 16 graphics and 16 alphanumeric colours from a palette of 256 shades for the 640 x 480 resolution display. Zoom and roam features allow expansion and windowing of parts of images, which can be stored with four times the screen resolution in the maximum expanded graphics memory.

Sales up 53% at Floating Point

by Kevin Cahill
SPECIALIST array processor supplier Floating Point Systems has produced third quarter results showing sales and profits substantially up on last year.

Sales for third quarter 1982 were \$22.5 million, compared with \$14.5 million for the corresponding quarter last year, a 55% increase.

The sales growth was substantially exceeded by profits which at \$3.06 million were 101% up on the corresponding quarter of 1981 (\$1.5 million). The nine-month turnover was \$63.1 million compared with \$41.1 million for the first nine months of 1981.

The figures meet almost exactly the estimates for profit and sales made a few months ago by industry analyst Susan Hirsch of New York brokers Smith Barney Harris Upham.

Test harness for PL/M language

by Kevan Pearson
COMPUTER and software consultancy Scicon has launched a test harness for Intel's PL/M language. The harness allows PL/M programs to be tested quickly and simply, the company claims.

The device is available in four versions, one for PL/M 80, and three for PL/M 86 including one with a built-in 8086 microprocessor for development work, and another for use in IBM-PCs, Intel's own operating system for its 8086 device.

The system automatically checks the result of running a program and produces a test log recording the input data, and results, with explanatory comments.

Licence fees for the 8086 version are £1,000 a system. Versions for the 8086 cost £2,000 for one system, £3,500 for two licences and £4,500 for three.



Lack of money, not lack of interest, affects the decision to buy.

ICL loses and gains

■ From page 1

Given the Prime Minister's interest in seeing ICL involved in the DVLC contract, it is surprising that the specification was written so that ICL could not tender for the key central processors. This political hot potato is one of several likely to drop in politicians' laps as a result of the Swansea tender.

The second element of the tender request is for OCR equipment, which is a convenient way of overlooking the fact that the new media chosen for the key input task are very much more highly mechanised and less labour intensive than the existing massive key-to-disc operation.

OCR Scandata and Scan optics

have been chosen to compete for this equipment, which will be required to read between 500 and one million documents a week. Both again are American companies and were among the few companies which could actually tender for optical character page reading equipment which can read hand generated input.

The third element of the tender so far made public is for the printer requirement. IBM and ICL, which will presumably offer the Siemens laser printers, are both shortlisted for this element of the tender, which will be worth several million pounds and which is likely to be awarded jointly to both firms.

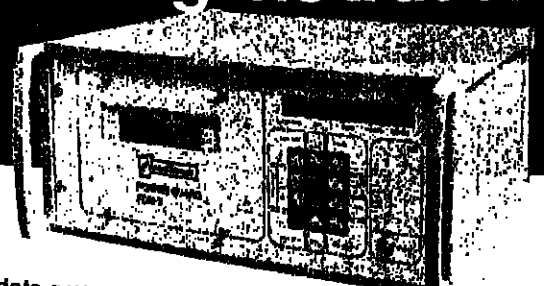
DATA WIRING

- Cabling of complete computer systems from VDU to CPU
- All types of computer cables available
- All work carried out quickly and efficiently.

DATUS

Reading, England
(0734) 730233
TLX 847423

Is your computer telling the truth?



If data errors or computer hardware failures are caused by supply problems the FDM-3 Powerguard will pick them up. It monitors power lines continuously for disturbances on single or three phase mains supply. The functions are: Detection, Process.

Analysis and classification. Powerguard will detect faults such as voltage errors, transient and frequency errors - even if left unattended for long periods. It will also monitor a DC source. Get the true facts from us.

W & G
W & G Instruments Ltd.
Progress House,
412 Greenford Road,
Greenford,
Middlesex UB8 3AH
Telephone: 01-575 3020
Telex: 934489



standard features. And if you need more, we have more than enough options to choose from.

GE IS YOUR BEST CHOICE FOR QUALITY OPTIONS.

A 32K Text Editor allows you to work off-line to reduce on-line time and communication charges as much as 70%. Transmission speeds are available from 110 to 9600 baud.

With GE 2120 printers in your network, word gets around fast.

Immediate, reliable hard copy data communications with a sustained 150 cps rate. Whether you're linking several departments within the same facility... several buildings within the same city... or interconnecting print stations in cities around the world, GE 2120 printers are ideal in electronic mail or other communication network applications.

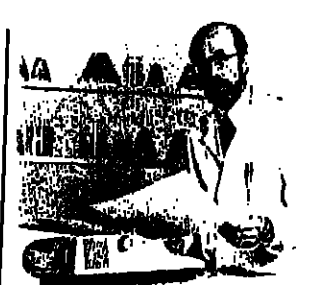
Stylish, compact, lightweight, quiet and easy-to-use, the energy efficient GE 2120 comes with an outstanding list of

A range of data buffers from 2K to 16K capacity provide the throughput efficiencies you need at high transmission speeds. You get choices in paper handling: friction, pinfeed platen, or adjustable tractor. And a range of other useful options and accessories is available to meet your specific needs.

YOU'LL FIND WE HAVE MORE THAN ONE MODEL OF EXCELLENCE.

WHO'S FIRST IN ELECTRONIC PRINTING?

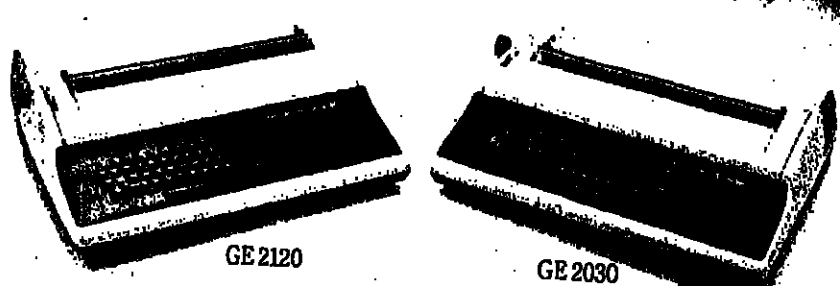
Today, General Electric is a specialized full-line printer



supplier with over a decade of experience meeting a wide range of data printing needs.

And remember, our roots go back to Thomas Edison. It was in his tradition that in 1969 we introduced the first electronic printer with modern LSI circuitry. Since then, we've continued to advance the quality and reliability of printer technology.

General Electric... the industry leader in electronic printing. We pioneered the industry in the first place.



First In Electronic Printing.

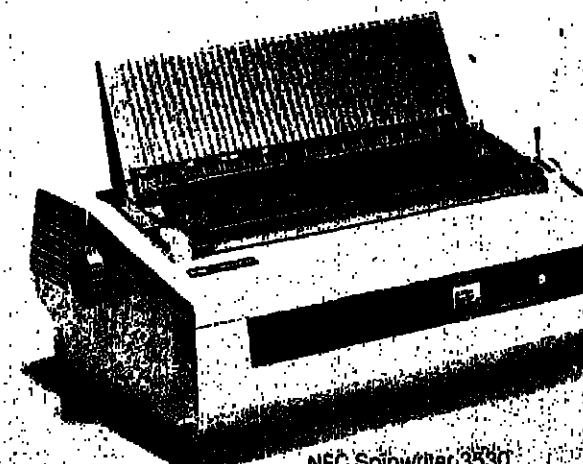
For the solution to your printing needs post today to:
International General Electric, 111 Park Road, London, NW8 7JL, Telephone 01-402 4100

GENERAL ELECTRIC

*Trademark of General Electric Company, U.S.A., not connected with a British company of a similar name.

NEC
Nippon Electric Co. Ltd.

For U.K. and Europe, please contact: NEC (Europe) Ltd., NEC House, 164-166 Dringthorpe Street, London NW11 3BP, U.K.
Tel: 01-268 0400 Telex: 35104 NEC LON
For West Germany, please contact: NEC Home Electronics (Europe) GmbH
Vespastrasse 148, 4040 Düsseldorf, Germany
Tel: 02101-278-0 Telex: 851781 NEC D



NEC Spinwriter 3500

64Kbit/sec BT service in New Year

by John Kavanagh
BRITISH Telecom's 64K bits-a-second communications service will be available between six UK cities from January and the order book will be opened next month.

The new service is KiloStream, one of BT's X-Stream digital communications services launched at the start of the year. It is a private circuit service allowing users to send data on a single telephone speech channel without modems. It handles only one speech channel but provides very fast transmission for data, text and facsimile.

Initially the service will be available between London, Birmingham, Leeds, Manchester, Newcastle and Sheffield. Most other major towns and cities will be hooked up by mid-1983 as part of BT's £2,000-million-a-year modernisation plan.

John Whyte, managing director of major systems at BT, said over 120,000 miles of digital systems were now working.



GILBERT... "This technology will become the norm in broadcasting."

Kode moves to Europe

KODE Services is taking its Winchester disc repair service into Europe by setting up maintenance facilities in Germany in the next nine months. At the same time the UK firm has won a contract from a fourth US manufacturer, Computer Memories, to handle repairs for its European customers.

The move into Europe comes less than a year after Kode Services started in the Winchester disc maintenance business by spending

£75,000 on setting up a repair centre. And the company sees the move as part of an international expansion of its general engineering support services. "We are doing a fair amount of disc repair business in Europe, and Germany in particular has been very good for us," said financial director Ernie Griffiths. "Setting up repair facilities there will give us credibility on which to build a field service operation."

Here is the TV News — by WP

by Robert Parry

AFTER the office of the future, the television studio of the future. The BBC, backed by £250,000 from the Department of Industry, is to bring in a computerised word processing system to handle news preparation for breakfast television.

The system, based around twin Hewlett-Packard HP3000s, will be installed in the BBC's Lime Grove Studios. The DoI grant, under the scheme announced in June to set up pilot office of the future projects in public sector organisations, goes to HP for the hardware. The BBC will pay installation and maintenance costs.

As well as the normal word processing facilities to help journalists prepare stories, the system will be linked directly to Reuters and other news agencies. Individual producers or programme researchers will be able to use the system as a diary and to store information.

The complete 2½-hour programme script will be compiled on the system, all the way down to accurate running times for items based on presenters' reading speeds. Late changes and re-timings will be easy to incorporate, even once the programme transmission has started.

"This technology will very much become the norm in broadcasting studios," says Philip Gilbert, general manager of the Lime Grove Studios. He emphasises the speed and versatility the system will bring to generation of programme scripts.

First govt demo cent features 'real' CAD

by John Kavanagh

INDUSTRIAL computer-aided design is on show doing real live work at the government's first demonstration centre.

The centre has been set up at Solartron Electronic Group in Farnborough under the £9 million programme aimed at promoting awareness of the use of computers in the electronics industry. It was opened last week by industry under-secretary John Butcher.

Visitors can see Solartron staff using a Computervision CAD system to generate production drawings from printed circuit board designs. "It is ironic that the industry which has led the microelectronics revolution should need to be made aware of the use of computers," said Butcher. "Yet studies show that the UK is slow to adopt computer-aided design, manufacture and testing compared with overseas competitors and that there is a lack of awareness in many small companies."

"If this situation is allowed to drift, the UK's competitiveness will decline," Butcher added that there had

been an encouraging report from the government's £12.5m equipment funding scheme: introduced in July. Support totalling £600,000 had been approved for projects out of 40 applications. Howard Dorey, chief engineer at Solartron, said: "The company was getting visits three days a week. I don't think there would be a lot of time there have been — and that's me because it shows people willing to learn," he said.

Dorey said Solartron had good results from CAD: "It covered the cost of our first nine months. That's a very good investment of that kind."

Solartron is working to more automation. It has a 32-bit VAX computer for circuit design, automatic test equipment, automatic circuit board drilling, semi-automatic chip insertion.

The other demonstration centres are at Racal Communications in Bracknell, Ferranti in Edinburgh and Micro Computers in Tewkesbury. They are arranged through the Institution of Electrical Engineers in London.

SOFTWARE FILE



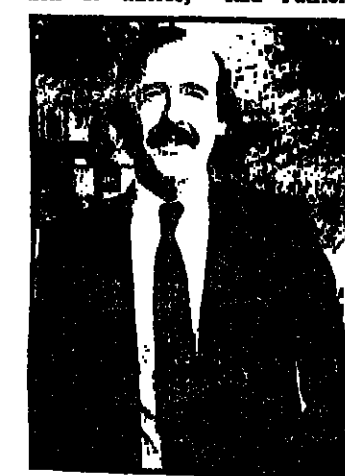
HUNT... Graphics will be the icing on the cake, not used to sell.

Relational DBMS for 16-bit micros on Oasis

RELATIONAL database will soon be available for 16-bit microcomputers on the Oasis multi-user operating system.

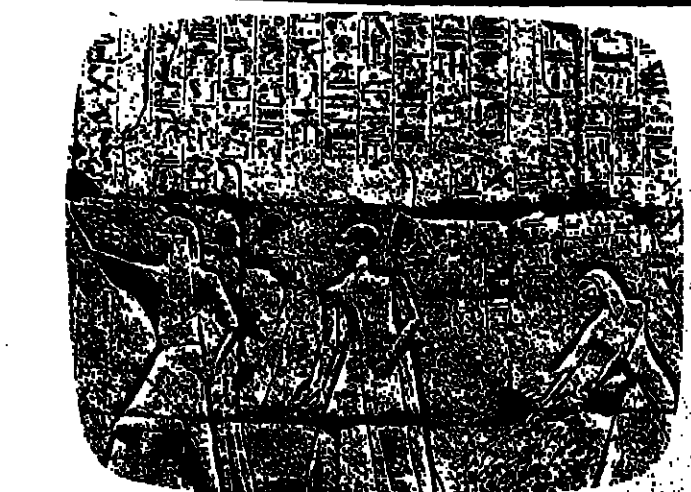
Systems house SISCO has implemented the Control database developed by Phase One in California on the Oasis system to run on the Executive machine made by the Computer Information Company in the UK, for which it is an OEM. Executive can be either an 8- or 16-bit micro, so the 16-bit implementation will be compatible with the IBM Personal Computer and ACT Sirius 1, both of which support Oasis.

"We have held back from launching the 16-bit version because people have not yet realised the benefits of the second generation of micros," said Patrick



O'BRIEN... "Not to be the cavalry and first over the bridge."

Software File is compiled by Maggie McLening.



Not all printers are as advanced as they're cracked up to be.

We've just introduced the NDR8000 series of high quality matrix printers for data and word processing to our range.

So for a printer that doesn't crack up and a better price with national service, choose Logitek - the advanced one.

Choose logically.

LOGITEK

Sales Office:
Logitek House,
FREEPOST: Wigton,
Lancs WN6 0QH
Tel: (0257) 426644

Graphics firms rush into colour

WITH the foot of financial modelling now firmly planted inside the business door, it may soon be wearing a range of colourful shoes.

Following database specialist Cullinane's recent link-up with Computer Pictures to provide its IDMS Online Query Language with colour graphics facilities, major US software package supplier Management Science America (MSA) and its subsidiary Peachtree Software International have both announced products in similar vein.

This is likely to be the start of a spate of colour graphics releases by other software suppliers, as the graphics industry moves quickly towards establishing its own standards. Twelve graphics software companies recently pledged support for the two standards, North American Presentation Level Protocol Syntax (NAPLPS) and Virtual Device Interface (VDI), adopted by hardware

manufacturers Digital Equipment Corporation, Intel, and Tektronix. Major names among the 12 include Digital Research, ICL, Microsoft, Xerox, ISSCO and Westinghouse Electric Corporation.

Standards for graphics protocols and function interfaces will give a stable basis for future development, and financial modelling is an obvious area in which colour graphics can be used to improve clarity and impact of data.

"I see a big trend towards graphics for reporting, both on mainframes and micros," said Michael Hunt, vice-president of MSA. "Although our prime business is selling financial application software, there will be a lot of graphics bundled in with it, because there is such a demand. The graphics will not be used to sell the financial packages; they will be the icing on the cake."

MSA has launched an interface module to operate in conjunction

with the company's forecasting and modelling software, which can be linked to access any MSA system modules, such as general ledger, accounts payable, payroll and personnel.

"This is essentially an interface to the IBM display system, and as such is supplied free with the forecasting and modelling software," said Hunt. "If the user wishes to download data to a micro, he could use the Peachtree graphics package instead."

Peachtree has launched two colour graphics products: Peachtree Business Graphics System and Peachtree Graphics Language (PGL).

The Business Graphics System includes an interface to Peachtree's Peachcalc, formerly known as MagiCalc, and Peachtext, formerly Magic Wand. It is a menu-driven graphics application program for CP/M based micros, which can be used to develop presentation colour graphics.

Ambulance scheduling system

A SYSTEM to streamline ambulance scheduling has been developed by UCL (Systems), a company formed within UCL Northern to specialise in applications software.

The scheduling system is an attempt to curb a massive daily shuffling of paperwork, according to John Ashley, managing director of UCL (Systems).

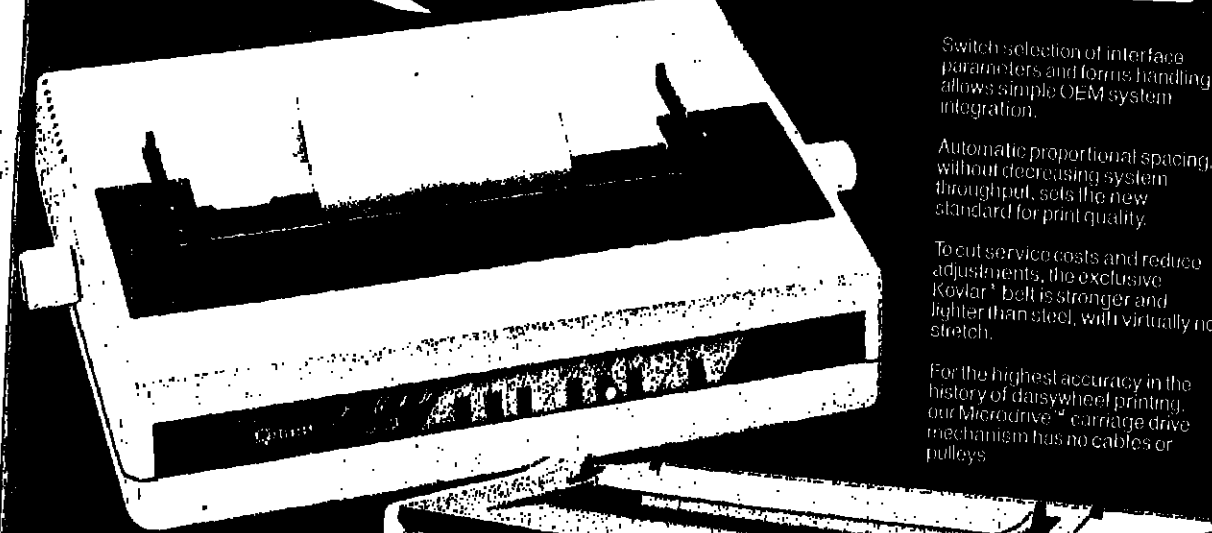
Using UCL's system, requests for ambulances are input direct to an Ultimate minicomputer system, and scheduling can be left until the last minute. An automatic pre-planning system produces a list with 50% fit of patients to hospitals and ambulance routes.

Each ambulance depot is given a printer, and dials up for the day's schedule of drivers, passengers, times and destinations in the morning. The controller can then adjust the routes to cater for emergency calls by radio control during the day.

The ambulance system, which costs £50,000 including both hardware and software, has been installed in three districts so far.

It runs under the Pick operating system on Honeywell Level 6.

QUME



THE SPRINT 9
45 & 55 cps

THE SPRINT 10
35 cps

Test drive our hot new daisywheelers

If you've always wanted letter-quality printing, but the cost has put you off, then the SPRINT 9 and SPRINT 10 are for you. Now you can have the same high quality print — usually only available on word processing systems — at prices that will let you forget all about dot-matrix terminals. With speeds of 35, 45 and 55 cps (average English text, not burst rate), the reliable high performance of SPRINT terminals leaves the crowd behind. Prove it to yourself with a test drive.

Call or write your Qume Distributor

Qume

Qume (UK) Limited
Bridgewater Close, Reading, Berks RG3 1JT
Tel: (0734) 994646 Telex: 845705

A British Company of IFF

Qume (UK)
AUTHORISED DISTRIBUTORS

ACCESS DATA COMMUNICATIONS LTD., Unit 17,
Eskdale Road, Uxbridge Industrial Estate, Uxbridge,
Middlesex UB8 2RT. Tel: (0895) 30831.

ALPHATECH COMPUTER SYSTEMS LIMITED
Unit 6d, Rose Industrial Estate, Cores End Road
Bourne End, Bucks. SL8 5BA. Tel: (06285) 28237

BYTECH LIMITED, Suttons Industrial Park,
London Road, Epsom, Surrey RM11 1AZ. Tel: (0734) 61031.

DAISY TERMINALS LIMITED, Bridge Road,
Haywards Heath, West Sussex. Tel: (0444) 457546.

ISO DATA SALES LIMITED, Unit 9, Falacres Industrial Estate,
Dedworth Road, Windsor, Berkshire.
Tel: (07535) 57955.

ROHAN COMPUTING LIMITED, 52 Coventry Street,
Southam, Warwickshire. Tel: (09268) 4045.

YORKSHIRE & HUMBERSIDE REVEAL ALL IN LONDON.

You are invited to attend one of three informal luncheons, each giving you an insight into business in Yorkshire & Humberside - 'the heart of Britain'.

28th September 1982 The Petrochemical Industry
An analysis of the fastest-growing energy and petrochemical centre in the UK, and the services and support the region offers the industry. Guest Speaker: Michael Mong-Hansen, CIBA GIGY Chemicals Ltd.

28th September 1982 Advanced Technology
As technological awareness increases, companies are finding it harder to evaluate the advances that have been made in the light of their own needs. This region, however, abounds in consultative aid. Guest Speaker: Professor M.G. Mylrot, Bradford University.

30th September 1982 The Services Industry
A discussion of the region as a centre for insurance, Banking, Finance and Business Services, with special emphasis on excellent transport and communications links. Guest Speaker: Peter Wycherly, Dunlop Sports.

Venue: The Institute of Directors, Pall Mall, London.

To reserve your place, telephone: (0632) 444639 and ask for Paul Richards.

Yorkshire & Humberside Development Association

British Aerospace guided weapon systems like Rapier have made a major contribution to Britain's recent victory in the Falklands.

Here at Stevenage, we are particularly proud of our role in specifying, co-ordinating and integrating the built-in software which enables this unique low-level surface-to-air missile system to track its target automatically.

Future generations of Rapier with even greater intelligence, incorporating more microprocessors and distributed high integrity software, are already in an advanced state of development.

To maintain the necessarily close relationship between system design and hardware, we have created our own specialised software house within the Dynamics Group and are expanding its capability with new VAX systems, a local area network providing intelligent work stations and the most powerful (32 bit) real-time minicomputer currently available.

Once again our software teams and Systems Engineers will be working hand-in-hand to meet our customers' exacting requirements.

The software house behind a successful guided weapon system



BRITISH AEROSPACE
DYNAMICS GROUP

at Stevenage

British Aerospace PLC, Dynamics Group, Stevenage Division (PB 210)
P.O. Box 19, Six Hills Way, Stevenage, Herts. SG1 2DA

More to the Cuckoo than meets the eye

IT'S that lovely moment; you have finished amending all your software, your Pet has curled up contentedly and from here on in it's "lie back and feet up" time.

But life doesn't work like that. In comes your boss, and suddenly you need multiple terminals and two new applications and, really, a 16-bit machine.

But what about the 8-bit based applications you have spent all year amending and have only just got running for the first time? Well Larry Park, managing director of Quality Business Machines, has three answers, cost tailored to suit most users and their problems.

A long-term fan of the micro and an early proponent of its use in everything, Park runs a combination of inventors' workshop, hardware design service and software house down among the antique shops of Queens Gardens, Brighton.

"It's a shame to leave that software lying about, each program capable of running on only one machine, or under one operating system, or worse still, on one type of disc," Park says.

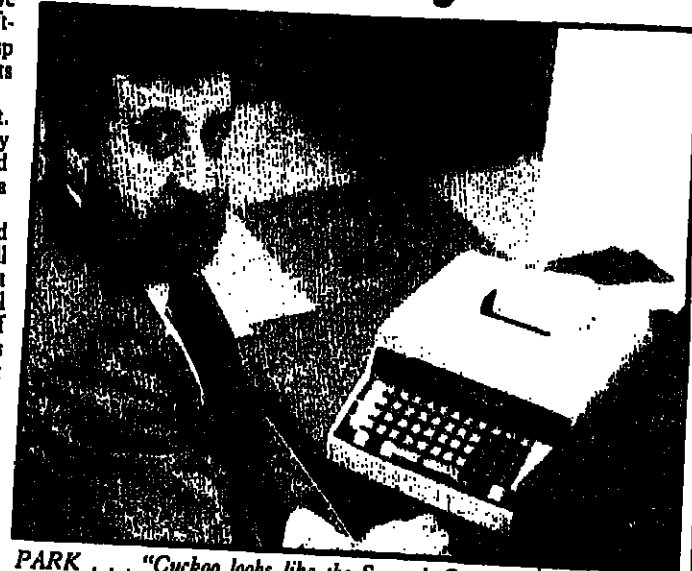
So two years ago he got to thinking about the problems "seriously" as he puts it.

He won't admit that his experience as a mainframe man — he helped found ICL's Dataslink — had anything to do with it, but his answer looks suspiciously like what we used to do when the mainframe was overloaded. We stuck another computer (not in the budget) on to our 2960 and called the new equipment a "front end processor".

Using techniques like this QBM solves three types of problems.

The Cuckoo makes a one-manufacturer software house independent of a single vendor's hardware, by making that software house's products available on any machine, mainframe or micro.

The Dataslink allows any one computer to communicate with other computers more easily. This includes micro-to-mainframe communication and mainframe-to-



PARK... "Cuckoo looks like the Seventh Cavalry."

mainframe connections.

Finally QBM offers a disc conversion service, which will convert software written to run on CP/M, so that it can be run on any other disc based system, whether 8 or 16-bit, and based on either 5¼in or 8in discs.

So Larry Park has not invented the universal protocol converter. He and his inventive engineers do need to know what the software was written to run on in the first place, and what you want to run it on now. There are a series of standard Cuckoo interfaces, from CP/M-based programs to IBM, Sirius, Pet and so on. On the other hand if you have some obscure Rumanian machine, on which you want your 2904 ICL Cobol to run then there is a set-up cost.

Park points out that this one-off cost, which can be reduced by participation of these system houses wanting to use the facilities, can liberate a software house to supply its programs for any make of machine.

"With the recession wiping out so many one-manufacturer software houses, the Cuckoo looks like the Seventh Cavalry," he says.



What a mess our schools are making of programming

IT seems likely to me that education in programming in our schools is in a mess, and probably doing more harm than good in many cases.

Over the last decade two major areas, which I have termed cultures, have emerged — the professional and the amateur culture. These can now be seen to be drawing apart.

The professional culture is concerned with developing programs of a long-lasting nature. These programs are usually fairly large and written by teams of programmers whose profession is primarily the design and writing of programs. The programs will or should be adequately documented and will need maintenance throughout a life cycle which may last for many years.

The amateur culture has generally the opposite characteristics. The programs are usually small, and are often written by individuals who are amateur programmers — their profession is in a different field such as accountancy, medicine or chemical engineering, and they use the computer merely as a tool in achieving goals in their own field.

The programs are often very short-lived, perhaps used only once, and consequently need little or no maintenance and do not deserve significant documentation.

Because of the short lifetime of the programs it is not vital that the languages used are standard or stable. Important characteristics of such languages are the ease of writing and general "programmer friendliness". Interactive use is almost inevitable and the programmer is usually also the end user. Examples of languages aimed at the amateur culture are Basic, APL, Mumps and Fort.

The professional culture has been represented, so to speak, the mainstream of development, from Fortran in the early 1950s through to Ada now. The amateur culture is newer, perhaps commencing with Basic in the mid-'60s and largely driven by a need to make cheap computing power directly available to the end user.

An important force in the development of amateur languages is user friendliness. The development of professional languages is driven by a quest for manager friendliness.

The reader may have noticed that Pascal did not occur in either of the lists of languages. The status of Pascal is somewhat unusual, it was designed as an educational tool to illustrate the fundamental concepts of data types, data structures and algorithms.

Unfortunately Pascal is too austere. The type concept is not flexible enough to enable the writing of simple procedures to manipulate arrays of arbitrary size, a vital facility provided in all professional languages from Fortran onwards. Pascal also neglected separate compilation. Although individual implementations and the ISO standards have added facilities in these areas, nevertheless the language is still not adequate for the writing of large programs.

But it was a tremendous intellectual development and laid the foundation for language development in the 1970s and in particular laid the foundation for Ada. At the university level, the education situation looks promising. The dilemma between teaching something practical but horrid like Fortran and something elegant but useless like Pascal could be resolved by teaching Ada as a representative professional language. Assuming that Basic has been inadvertently learnt anyway, it would be appropriate to teach Fortran as a representative amateur language.

At the school level, the situation causes some concern. Many university teachers have stated that pupils who have learnt computer

science at school are at a disadvantage since they have to be taught various misconceived ideas. The Basic in a rather foolish fact, and do not become aware of these other possibilities. There are also tremendous computer pressures just to teach Basic. It is readily available at lower education some general sense of the possibilities of computer needs to be taught. Such a case should be devised around their own culture and Basic seems obvious choice. However, it is intended to concentrate on science or mathematics in their form and then possibly use a similar degree, learning that is not appropriate.

What is needed is to build a set theory and other abstract mathematical concepts which is taught at an early age and still to many parents at least, is rather pointless. This is a professional style language design around Pascal might be appropriate. Mathematically minded children would also enjoy it.

The teaching of a new subject always difficult. Should it be taught from an historical point of view or from the position of current knowledge? When a subject young, an historical viewpoint seems natural whereas when a subject this approach is wasteful waste of time and misleads.

A final thought: The designers in our big organisations probably belong to an age group which did not have much computer exposure in their childhood. They probably children who think Basic is dreadful.

Are these children inadvertently damaging the minds of our nation-makers?

John Barnes

Barnes is director of language search at SPL.

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, September 16, 1982

DEC distributor list in disarray

SEVEN months ago Digital Equipment announced its grandly titled authorised terminal distributor programme and paraded top men from its five "official" distributors. The idea was to give DEC close control of a market which was in some disarray, with a large number of companies competing with the same DEC products.

But now the authorised distributor programme itself is in disarray, with some companies talking of pulling out and others complaining of being undercut by "unauthorised" competitors and even by DEC itself. Meanwhile, long-standing DEC distributors are still smarting at being excluded from the "authorised" list.

In short, as one authorised distributor put it, the programme is a disaster.

The people who are benefiting most from this disaster are users — or are they? In the short term they can get good prices by shopping around as authorised and unauthorised distributors undercut each other; precisely what DEC was trying to stamp out by introducing the programme.

But what of future support as authorised suppliers pull out of DEC's programme in disgust and unauthorised distributors lose interest as their sources of supply dry up? For unauthorised firms which put in long-term orders with DEC at the start of the year, expecting to be put on the official list, now see those contracts coming to an end.

DEC was among the first big manufacturers to try to set up a controlled network of outlets by appointing authorised distributors. Others, including IBM with its Personal Computer, are expected to follow suit as a way of shifting large numbers of small products without a massive central sales force.

It is to be hoped that others will learn from DEC's experiences. For the disarray in such big markets is good for no one: the manufacturer, the authorised and unauthorised distributors, some of which could be facing uncertain futures, and their customers, who risk being left in the lurch.

Turning work to play

BEHIND the scenes at the International Conference on Computer Communications held in London last week, a debate raged on how to minimise the damage and maximise the benefits of information technology.

Packet switching, digital transmission and integrated services all caught on in discussions at conferences, according to ICC82 chairman John Whyte.

The task facing the computer and communications industries now is to promote the healthy growth and widespread use of equipment and services which will benefit all of us without ruining some of us.

Quite likely there were few delegates at this particular conference who questioned the value of information technology to society, but many in the world outside it remain to be convinced.

One suggestion at the conference related to the acceptance of office automation systems. Richard Clark of Joan de Smith Systems said that micros had caught on because games were available for them and therefore office systems should be trivialised to get them into use. Facilities should be made available that users felt they got something out of, even if the organisation derived no immediate benefits.

This may sound like anathema to a commercial organisation, but at the same time it calls to mind a remark made by Kenneth Baker in his keynote speech to the effect that the relationship between work, education and leisure would have to change in a fundamental way.

Education and leisure are economic activities, just as work is. The trick now required is to develop computer and communications systems that teach us to generate wealth by playing at work.

If that is what comes out of ICC82, it will have more than earned its keep.

1984 and all that

THIS week's example of the strange things people say about computers was sent in by Wendy Marlow, of Feltham, Middlesex, who wins £5.

Computers chat in various languages but the four most common form the Esperanto of the computer world.

Noughts and 'A slur on most ops'

IN reply to Leonardo Bottacci's letter (CW, August 26) about "an operator being only too happy with a response time of five minutes while he has a smoke and cup of coffee", is once again contributing an undeserved slur on the good name of most computer operators.

It seems to imply the old-fashioned Sixties theory about operators being "dumb dumb office boys" pushing buttons and stacking boxes of stationery. In fact the operators of this day are an intelligent specialist section of computer personnel, requiring knowledge of hardware, software utilities and JCL for the complexities of modern day computers and operating systems.

Lurking in the wings

I WRITE with reference to Brian Pugh's Op Spot article, "Top managers in desperate need of advice on DP policy" (CW, August 26). Pugh need not worry. The government may not have got it right for us (ex-Tops business systems analysts) but they have for industry. The course I was on was comprised of people who recognised that specialists tend not to make the broad contribution required of senior managers.

As our lack of DP experience makes it difficult for us to be accepted by DP professionals we will filter back into industry by some other route.

Thus, lurking in the wings of industry, is an ever-increasing body of commercially-oriented people who have learned their business principles first and now have a clear idea of the capabilities of DP technology. This body of "business professionals" is well prepared to take up the expansion of data processing usage.

PETER DUNDERDALE
Bury
Lancashire.

Unix marketing in UK

MAGGIE McLENNING's article "Unix set to penetrate commercial market" (CW, August 12) is inaccurate in one important respect and misleading in a number of others. I must ask you to explain to readers the true position regarding the marketing of Unix-based systems in Britain, and set the record straight.

The article stated that "CDS Computer... is the only company in the UK to have a System III licence". This is not true. My company is a recently formed subsidiary of Scan Computers, which has been selling Unix-based Onyx systems for two years. We have a Western Electric licence for System III, and have recently completed a beta test for Western Electric. Furthermore, it is worth noting that Western Electric uses

I constantly inform my operators about giving equal status to systems personnel and themselves because we are both dependent on one another and should work together, not against each other.

Derogatory remarks of this nature makes it harder for us all to bridge that rift between the operations and technical sides. So please in future spare a thought for the hardworking and dedicated operators in this industry.

P.D. ADAMS
Shift leader
(Non-smoker, non-coffee drinker)

Yorkshire Regional Health Authority
Harrogate.

Micro payroll system

I AM AFRAID your publication included three mistakes in the payroll article in Software Month (CW, July 15). The first was our telephone number which is Wisbech (0945) 64146.

Our microcomputer payroll system (Wispay) is supplied on a lease basis which covers all upgrades to the system and accompanying support services. The lease is typically 3 to 4 pence per person per week for a payroll of 500 employees and reduces to 1 penny per person per week for 4,000 employees or more.

The figure quoted of 12½p is misleading as this is the charge if there are only 10 employees on the system.

Thirdly, the article implied that the Wispay system will only run on a North Star Horizon. In fact it will run on any micro capable of supporting CP/M, although preferably a system with 8in discs in order to take advantage of the BACS facility.

I.C. DUFFY
Managing Director
Wispay Computer Services
Cambridgeshire.

Speed for its own sake

YOUR editorial outcry against the pursuit of processing speed for its own sake (CW, August 26) comes as a most refreshing change. As a hardware designer as yet unbitten by the software bug, I have been reading your paper for years to try to learn enough jargon to converse with my programming colleagues.

It seems to me that the fifth generation architectural debate comes as a relief valve for the international pressure cooker of half-voiced dissatisfaction with computers. There are two kinds of thought, and the computer as we know it is a tool for the acceleration of the analytical kind. Words and numbers are the languages of analysis — you can teach this style of thinking to anyone who wants to use it, and it's essentially serial. Synthesis on the other hand appears to be unteachable; it's creative, essentially parallel and relies on the interaction of the shapes.

Let's hope the 5G machines emerge as tools for the acceleration of synthesis. Perhaps then the dissatisfaction will evaporate and hardware teams can go back to chasing "more bang per buck".

J.H. POPE
Cambridge.

Going bust

FOLLOWING on Cliff Dillo-way's article "When the supplier goes bust..." (CW, September 2) another safeguard is to arrange with your software supplier to place a copy of his source code, fully annotated, with an independent third party. The source code is to be released to you, the user, if and when your supplier goes bust, or otherwise fails to provide a satisfactory maintenance service.

Such arrangements have come to be known as "escrow" arrangements, and both NCC and CSA offer an escrow service.

W.S. ROTHWELL
Assistant Company Secretary
National Computing Centre
Manchester.

DOWNTIME

Shall we ever know?

COMPUTER WEEKLY's copy of the Gulf Telephone Directory had lain idle for several months, and after our first attempt actually to use it, looks as if it could continue to do so. The beautifully-produced guide falls down in one rather important area: pages 253 to 284 are missing.

While this may not seem awfully significant, I can assure you it is rather critical.

The missing 33 pages span the subjects between compressor suppliers and contractors — general.

Those familiar with the inflexible sequencing of the English alphabet will quickly spot that this effectively eliminates all entries beginning "computer".

Reliability test

HOW to judge the reliability of a particular firm's hardware? Simple. Count the number of engineers' company cars parked outside the golf course/pub/manager's parlour, deduct the number seen at user sites: divide the result by the number of cigars smoked by Michael Blumenthal, multiply by the square root of Robb Wilmot's salary, add the number of IBM law suits, finally subtract the number of users waiting for a BBC micro, and you have a number which relates directly to the reliability of the hardware in question.

Well, at least as much as the manufacturer's claimed reliability.

Some lunchtime legends

OFFICES are full of people who are mice in the morning who become legends in their own lunchtime, only to sink into post-prandial lethargy in the afternoon.

This description of the average white collar working day illustrates how the word "lunch" has swollen in meaning since it was first recorded for posterity by the great essayist, lexicographer and gentleman Samuel Johnson.

In his day a lunch was a little snack to punctuate the abstinence of a long hard day. Step now into the top people's restaurant L'Epicure, or one of thousands of other lesser, but nonetheless delicious establishments around 1pm and you will see that today's lunch is anything but a little snack. It is a great bit institution.

The Sunday Times recently ran a feature on the lunch describing it as a great divide between the working and executive classes. And Old Bailey jurors were recently warned of the dangers of lunching at pubs and cafes near

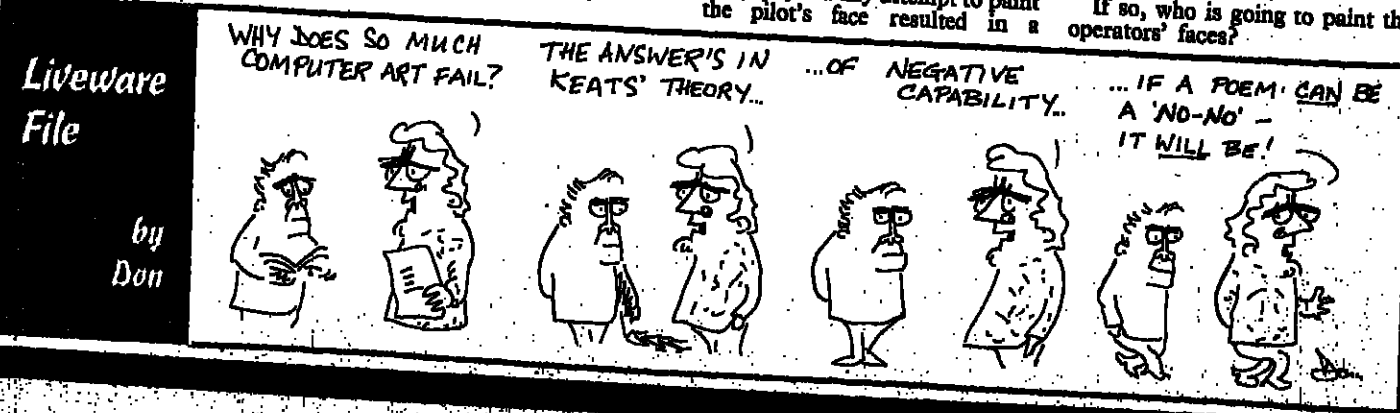
court during their cases lest their sense of justice be perverted by unscrupulous underworld bodies.

Meanwhile lunch and journalists have grown an affinity for each other over the last 50 years to such an extent that Private Eye created the legendary hack "Lunchtime O'Booze".

Lunch can be a seductive affair with Zabaglione, that delectable Italian mixture of whipped egg yolk and Marsala wine sweetening many an unpalatable half-truth from the lips of PR officials.

But some companies have tired of just lunching their Press fellows. Apple distributor Personal Computers has dreamed up a new extraordinary notion. It has invited journalists to submit an essay on one of the following subjects: The Personal Computer in 2001 IT Year — bang or whimper; Man may live by data processing alone.

An award for the best essay will be presented at — lunch.



Prime project enigma

Q: Where are they now?
A: Not at ICL.

Jim Foy, ex-TMB project manager at ICL, joined Prime in January, and it now seems that nearly all his erstwhile staff have left Wilmot Enterprises for the greener pastures of the US-based mini maker.

Foy and his chums are based at Prime's Bedford R&D establishment where they are hard at

work on a project enigmatically titled "The Workstation Project". The team report-direct to the UK and Prime UK has little or no idea of what is actually going on — or at least aren't admitting to anything.

But if you were the owner of an ageing operating system for which called, for the sake of argument, Prime, and you had just employed the entire project team of another manufacturer's rather good mini operating system, what would you do to conceal your real purpose?

Probably think up a fictitious project name such as, er... um... The Workstation Project.

Well, now one of the firms in the forefront of covering a million mother's carpets in glue has a computer connection. STC has just moved into the erstwhile headquarters of Airfix in Kensington.

Does this mean that the telecommunications giant intends to supply its IBM-compatible mainframes in kit form?

If so, who is going to paint the operators' faces?

STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

Stan Eldon, chairman of the organising committee, said Reading was "crying out for a major running event". He said competitors would include star athletes and runners.

John Barnes
Barnes is director of language search at SPL.

work on a project enigmatically titled "The Workstation Project". The team report-direct to the UK and Prime UK has little or no idea of what is actually going on — or at least aren't admitting to anything.

But if you were the owner of an ageing operating system for which called, for the sake of argument, Prime, and you had just employed the entire project team of another manufacturer's rather good mini operating system, what would you do to conceal your real purpose?

Probably think up a fictitious project name such as, er... um... The Workstation Project.

Well, now one of the firms in the forefront of covering a million mother's carpets in glue has a computer connection. STC has just moved into the erstwhile headquarters of Airfix in Kensington.

Does this mean that the telecommunications giant intends to supply its IBM-compatible mainframes in kit form?

If so, who is going to paint the operators' faces?

STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

Stan Eldon, chairman of the organising committee, said Reading was "crying out for a major running event". He said competitors would include star athletes and runners.

STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

Stan Eldon, chairman of the organising committee, said Reading was "crying out for a major running event". He said competitors would include star athletes and runners.

STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

Stan Eldon, chairman of the organising committee, said Reading was "crying out for a major running event". He said competitors would include star athletes and runners.

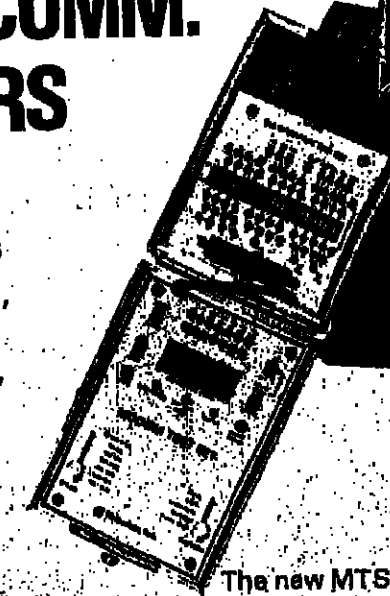
STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

STBR clear of Reading last March 13 for the streets will be clogged with 5,000 runners putting their way round a 13-mile half-marathon. And the main sponsor will be Digital Equipment, which has its UK headquarters in the town. As well as putting up money DEC will provide a computer system to the individuals and teams from the finishing line.

TO ADVERTISE IN
THE MARKETPLACE
SECTION, CONTACT
XENIA WHITE ON
01-661 8671, FOR
RATES AND DATA

DATA COMM. TESTERS

Find computer network faults... on modems, stat. mux's, V24 interfaces, audio lines, loopback or end-to-end. The great Electrodata range.



DAVID DISSET LIMITED
52, Ladbroke Grove, London W10 6BT, England. Tel: 01-262 5511

ICL Pottery

PEOPLE

Lawrence heads Valid sales in Europe

VALID Logic Systems of California has hired high-powered sales director Thomas Lawrence to head its sales and marketing operations in Europe. He will also serve as a vice-president of the US company.

In the newly created position of president and general manager Lawrence will be responsible for the definition, planning and creation of European sales channels for the CAE (computer-aided engineering) system Valid is to announce in September. Scaldsystem is based on the Scald software and consists of a suite of design

analysis packages plus graphic design entry hardware.

Lawrence's first job in Europe was launching Friden's entry into the DP market there through its European division with the introduction of the Singer System Ten in 1969.

He built up Apple's sales and marketing teams in Europe and as European vice-president and general manager saw a sales growth from \$16 million to over \$100 million between 1980 and 1982.

Before this he had been with Intel for seven years.

ITT has established the position of executive scientist to recognize individuals for outstanding contributions in scientific disciplines. Dr Charles Kao, in recognition of his pioneering work on optical fibre communications, is the first to take the title. Kao has been vice-president and director of engineering at ITT electro-optical products division for seven years. It is a permanent appointment, and for the first three years appointees are free to work at an ITT laboratory or unit of their choice in areas likely to lead to technological breakthroughs.

ERA Technology has appointed a new manager to lead its expanded power engineering division. He is Richard Stokes, an electrical and electronics engineer, who joins the company from GEC Traction.

Alex Kachellek, formerly with Sperry Gyroscope, has been appointed production manager at Case.

John Sharvell has joined Rathdown Industries, a Unitech subsidiary, as marketing manager of telecom products. He was formerly a sales manager with STC.



Birthday celebration

TRAVEL reservations service company Travicom has celebrated its fifth birthday and its growth from a six-agent, two-airline system to one with 420 agents connected to 28 airlines.

In our picture Peter Short (second from left), managing director Eric Jarvis and Frank Mannors (third and second from right) are drinking to the next five years with representatives from their "founder agencies".

Former independent consultant Tom Leonard has joined Precision Software as project development director. Former posts include a five-year spell as managing director of Finequote.

Management Resources has elected Andrew Gillon to its board of directors. He was previously company secretary at Rankins Fruit Markets.

Computer services manager at Golden Wonder and HP foods is Paul Hirst. He joined the company in 1974 as a senior programmer and was made chief programmer three years later.

Component product manager Steve Denton is to be promoted to systems product manager at Rapid Recall. He joined the company two years ago as Northern internal sales manager.

Previously a software manager with Olympia Business Machines, June Tucker has now joined Peachtree Software as a support consultant.

MDS has created a new job - that of manager of communications - and appointed Dick Wilkinson to the position. Wilkinson was previously manager of the company's South-West sales area.

Two appointments have been made at Utilux. Richard has taken up the post of sales manager and David Skidmore joined the company as a sales representative. Tyrell was formerly sales manager at ASRA, Sleight was a sales engineer at Ross-Courtney.

Dave Sperry has been promoted to international manager for Newbury Recording. He was previously Northern regional sales manager.

Golden River has named Oliver marketing manager, previously held a sales management position with Duo Traction.

Washington-based company Automated Copy Systems has changed its name to Applied Computer Systems.

Computer Aided Marketing is a new company that has been set up to help firms use computers to prove sales performance. It is based in Gloucestershire and is keen to hear from companies which have proven products that can help sales forces and management. Enquiries to J. Miller (director) on (0453) 046.

Joining Data Logic is Hamilton Rentals is Owen Jolly, who is appointed sales manager for the company's range of laser Modems.

DIARY

SEPTEMBER 19-24

Industrial digital and microprocessor-based control systems. IEE. Vacation School at Balliol College, Oxford. Details from IEE, 01-240 1871.

SEPTEMBER 23-24

Information systems - analysis and design working party. BCS. Open University, Milton Keynes. Details Guy Fitzgerald, 01-854 2030, ext 377.

OCTOBER 5

The impact of the new technology on management. Speaker David Fairbairn, director of NCC. IDPM Scottish branch-British Institute of Management. Merchants House, 7 West George Street, Glasgow.

OCTOBER 6

Impact of new technology on management - challenges and im-

plications of IT for the workplace. Speaker Ted Cluff, secretary general IDPM. IDPM Scottish branch - Institute of Management. Theatre, College of Commerce, Aberdeen.

OCTOBER 6

Introduction to Fort worth RCS Microsystems. Overbury Inn, Isleworth, Middle.

OCTOBER 12

Visit to Thames Valley Polytechnic Computer Centre. IDPM to London to Oxford branch. Thames Valley Police Computer Centre, Kidlington, Oxford.

JANUARY 5-6

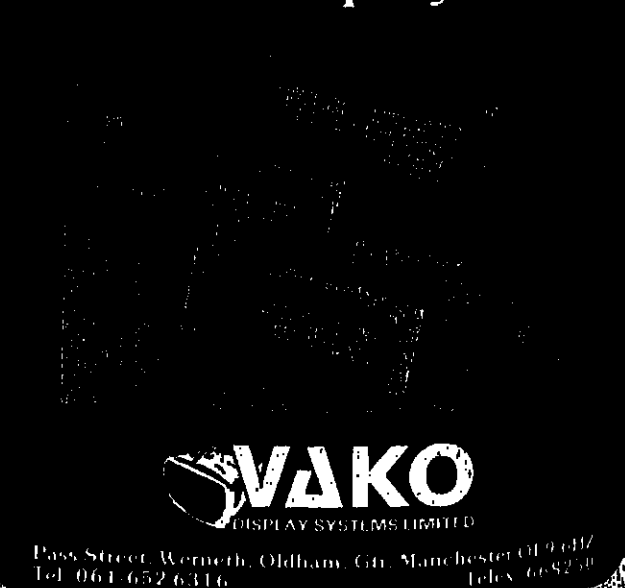
Viewdata. Conference on the state of the art. Institute of Information Scientists WP and computer information special interest group. Details Mrs Bird on (0) 645 2000 ext 8611.

CONFERENCES

The second Women and Computing Conference provides a forum for women in the industry to meet and share skills and experiences. As well as discussion on technical topics, wider social issues and practical problems such as applying for jobs will be dealt with. Women only may attend. The conference will be held in London on October 16-17. Fee is on a sliding scale up to £7.50 for the two days. Details and registration forms from Women and Computing Planning Group, 49 Crofters Mead, Croydon, Surrey.

The British Computer Society's Natural Language Translation Group is holding a meeting on machine translation dictionaries on September 11. Speaker is Professor Fred Knowles of Aston University, chairman of the Machine Translation Specialist Group of the Association of Literary and Linguistic Computing. The meeting will place at 6.00 at King's College, The Strand, London. Further information from Walter Goshall, 68 Barrington Road, Beckenham, Kent DA7 4UW.

O.K.I. Plasma Display Panels



We've cracked the basic problem.

Sord has solved the hardware-software, chicken-egg problem. By making all other micros seem basic.

Pips is the solution: Because Basic is the problem. Pips - Pan Information Processing System - is Sord's new high level language that is 20 times easier to learn than Basic.

User proficiency in Pips is achieved after just 24 hours. A remarkable feat when compared to the 4 to 6 weeks it takes to learn Basic.

A complex office task which can take one week to learn on Basic can be completed on Pips in just five minutes.

Pips is indisputably a unique breakthrough in operator convenience. And typical of

Sord's total awareness of consumer needs.

The pace of such forward-looking product development has thrust Sord to the forefront as Japan's fastest growing micro-computer company. A position it has held for 6 years.

Unlike any American competitor Sord has a complete range of powerful hardware. From the £100 hand-held micro to the complex 16 bit multi-user micro system. All equipped for any task. And extremely competitively priced.

To potential dealers, Sord offers an attractive dealer package which could include financial backing from a major international bank.

If you would like to participate in and profit by Sord's growth, please complete the coupon now or phone 01-930 4214.

Sord Computer Systems Inc, Samuel House, St Albans St, Haymarket, London SW1

Please send me further information on Sord. ☐

I am presently a successful "micro-computer" dealer ☐

I am especially interested in the exclusive dealer financial package ☐

Name

Position

Company

Address

CW1



TOKYO AND NOW LONDON

We're rich in the key resource for successful software development.



That's why more and more computer software development is locating in Ireland. They're coming to the country where over 50% of the population are under twenty-five years old. These young people have grown up with an educational system specifically tailored to equip them for this technological age. Each year sees a further upsurge in the resources devoted to higher education in technical areas. Fields like engineering and computer science.

It is these young people who provide a workforce potential unequalled anywhere in Europe or the U.S.

But Ireland is more than a rich source of educated staff. In Ireland you will find an attractive incentive package specially designed to meet the needs of technology-orientated industries. Industries where personnel is the key factor.

Ireland offers 100% training grants to new service industries and generous employment grants. And these are just two of the cash grant programmes available. In addition, you'll find that Ireland has the lowest corporate tax structure in Europe.

You will also find a working environment that is second to none in an age where employees rightly expect their job to permit an attractive lifestyle as well as simply a good salary. Because, in Ireland, while keeping pace with the changes dictated by this technological age, we've managed to retain all that is good in our environment and way of life.

Find out more about locating in Ireland. Contact the nearest office of the IDA Ireland for further details. We'll be glad to help.

REPUBLIC OF IRELAND

The intelligent location in Europe for international services

IDA Ireland

The Irish government's industrial development agency has offices in London at 58 Davies St, London W1V 1LE. Telephone David O'Donovan, 01-629 5941. Offices also in Dublin, Amsterdam, Paris, Cologne, Stuttgart, Milan, Copenhagen, Madrid, New York, Chicago, Los Angeles, Houston, Cleveland, San Francisco, Boston, Fort Lauderdale, Sydney and Tokyo.

WORKPLACE

No room for computers — so they're digging a hole in the garden

ONE might think that installing a pair of IBM 4331s in a converted cinema would be a hard act to follow, but in the case of Hill Samuel Life Assurance, you'd be wrong. The Croydon-based company is about to dig up a sunken garden surrounded by public pedestrian subways, excavate a new computer room, and replant the garden on top of it.

Until two years ago, Hill Samuel owned the Lowndes-Ajax bureau, and ran its work there in batch mode, sending vans loaded with printouts from the mainframes going to and from. A move to on-line working resulted in the acquisition of two 4331s for installation at the Surrey headquarters.

The only room available for the machines lay in the basement — a 450 square foot private cinema, complete with sloping floor. The console was installed up on the 16th floor to enable the systems staff to keep an eye on things.

One advantage of having the machines in the basement of the building where the users worked was that all the VDUs could be connected as locals, rather than having to use modems. Not only did this free Hill Samuel from the vagaries of British Telecom, but the increased line speeds made possible a response time of better than one second.

But the larger part of the workload, 80%-85%, was still handled by the bureau in batch. Any build-up of work at the home site would mean a hardware upgrade, and the cinema was already packed as tightly as the engineering clearances of the 4331s would allow.

(For those of you unfamiliar with these devices, the backplane hinges out as a single unit, practically the same length as the processor cabinet itself. Both ends must be kept clear, one for the microcode disc drive, the other for power switching. The end result is that although the machines appear to be compact and space-efficient in the glossy brochures, actually installing the things leaves an inordinate amount of wasted space around them.)

The only course of action to Hill Samuel appeared to be moving the DP department to new premises — something the systems director John Wright has strong views on. "The DP function is part of the company, it should not be a separate department. If we went elsewhere, DP would be an adjunct to, rather than a part of, the business. The company revolves around the computer, so moving it away made no sense."

So what else was there to be done?

"We decided to dig a hole in the garden," said Wright. At the foot of the tower block housing the Hill Samuel offices lies what is euphemistically known as a sunken garden. Surrounded on three sides by roads is a hole in the ground with pedestrian subways running round the outside. The central area is grassed and it occurred to the company that here lay a possible location for the expanded computer room.

And so it was that the idea for the £1 million underground machine room came about. The area is large enough to house not only a computer suite with three 4331s plus peripherals, but a standby generator, two months' supply of oil, and batteries for the uninterruptible power supply.

What do the operators think of working beneath a flower bed? Well, there have been no complaints. There are no operators. Early on in Hill Samuel's in-house DP planning it was decided that the operatorless environment was the way to go.

"It's the right thing for us to have no operators," says production services manager Calvin Bird, "for the simple reason that we don't really have a job for them to do."

Wright concurs. "Good operators have a great technical capacity, but spend most of their time doing dull jobs. Take out the routine work and you can utilise that expertise in other areas."

"It's exactly the same with programming. You still need one or two experts for things like CICS, but the bulk of the work is boring

and mundane."

Hill Samuel is therefore making the most of user-friendly tools such as UFO which makes screen formatting a much simpler and less time-consuming task.

"Our aim is to get three times as much output with one and a half times the number of staff," says systems manager John Coward.

"We prefer to have a few good people rather than lots of average ones."

"There will soon be a lot of average programmers — the ones who can get by on a little Cobol knowledge at the moment — and we do not see ourselves taking on staff in this category," adds Wright. "More and more of the dull, routine tasks are being taken over by the machines or clerical staff. There will always be a need for really good technicians, but the



Calvin Bird of Hill Samuel. Under the grass is the future site of the assurance company's DP operation.

days of mystique surrounding computers are coming to an end." To illustrate this point, Hill Samuel employs part-time staff to deal with the small amount of peripheral handling still carried out. Backups of the fixed disc drives to tape are performed by a retired policeman, a redundant British Telecom worker, and four married women.

None of them has a technical background, and the tasks they perform are prompted by the operating system in a user-friendly

manner. "I don't think they'd have accepted the job if they'd known what it was they would eventually do doing," says Bird, "but now they've got a job much more interesting than the run of the mill clerical worker has."

"They're perfectly capable people: they just don't want a career."

Output handling will be left to the users themselves — each department will have a printer and will only produce hard copy as and when required.

Another unusual feature of DP at Hill Samuel is the amount of autonomy enjoyed by the users. "We see ourselves building up a kitbag of tools for users," says Wright. "A lot of the jobs are delegated to the users — the material department use APL, rather than getting us to develop GCL programs. They've taken it to their ducks to water."

When the third 4331 is installed in 1984, there will be one machine

■ Turn to page 17

WORKPLACE

A hole in the garden

■ From page 16

running the online service, one on batch, and one for the development staff. There are 25 systems staff at present, increasing to 40 by next summer.

"The advantage of having separate machines is that you can have IBM engineers crawling all over one of them while still providing a normal service to the users," says Wright.

The machines are run 24 hours a day, seven days a week, with IBM engineering cover on prime shift only (and IBM is just across the road). Wright says that the hardware is very reliable and estimates the mean time between failures as two years.

"That means that one morning every two years we can expect to come in and find that the overnight batch runs haven't been done. We can live with that."

But with no operators, and not even a dedicated systems programmer, who reconfigures the system in the event of a failure?

The facilities group, part of the production department normally dealing with the user facilities, like APL, down tools and rush



WRIGHT... "DP is part of the company."

downstairs to throw the requisite switches. "Everything is proceduralised," says Bird, "and we can reconfigure, re-IPL and get the service running again in 45 minutes."

In the event of a more substantial failure, Hill Samuel will have both warm stand at the Lowndes-Ajax bureau, and a cold standby site.

"The real problem would be trying to catch up with the backlog," he adds. "If we were down for three to four days, it would be like running up a down escalator."

Now, operations provides a genuine career path

The second part of our series on changing job functions and titles, by Les King.

TO the career-minded DP professional the expanding role of the computer operations department has been one of the most significant developments of recent years.

No longer a poor relation to systems and programming, computer operations can now provide a worthwhile and technically challenging career path leading to the most senior levels of data processing management.

Indeed, today's operations manager frequently enjoys a status equivalent to that of, say, the systems manager, and it is not at all uncommon to see staff at this level swapping between operations and systems development.

Additionally, the typical operations team has now shaken off the machine-minder image and is organised around the broader context of providing a total service (i.e. working computer systems) to

user departments. This has led to a much broader range of responsibilities including systems programming, database administration and communications network control.

A good example of these new responsibilities is the job of operations analyst, a position best described as the operations equivalent of a systems analyst.

Essentially, the operations analyst provides an interface between users (including the operations department, which is a user in this context) and systems development staff.

However, where the involvement of the systems analyst largely ends when a project goes live, the operations analyst has continuing responsibility for the support of production systems.

Why, I hear you ask, is there a need for operations analysts?

Unfortunately, it is a fact that computer systems, just occasionally, fail to work as advertised.

This may be for a variety of reasons including machine failure, incorrect data, programming errors or, possibly, because of an "R" in the month (seriously, many systems fail because of unforeseen and therefore untreated conditions, such as a 53-week tax year).

In theory, such failures could be investigated by systems development staff although, in practice, it is extremely difficult, and quite dangerous, for an analyst or programmer to pick up unfamiliar work producing quick fixes to solve the problem.

The operations analyst, however, is a lack of all trades who co-ordinates all elements leading to the smooth running of the operations department and production systems.

He, or she, would normally be given specific responsibility for particular applications from the early stages of systems development when he would assist with the planning of machine loadings, data preparation, requirements and other resources essential to production running.

Once systems testing is complete, the operations analyst, in his role as user department representative, co-ordinates acceptance testing and the creation of the production environment which includes JCL writing (and fine tuning), the preparation of operations manuals and the definition of recovery/back-up procedures.

When the system is in production, the main function of the operations analyst becomes first

line fault investigation.

Using available diagnostic tools, the essential task is to positively identify the source of the problem and to organise appropriate corrective action, calling in specialist expertise, as necessary.

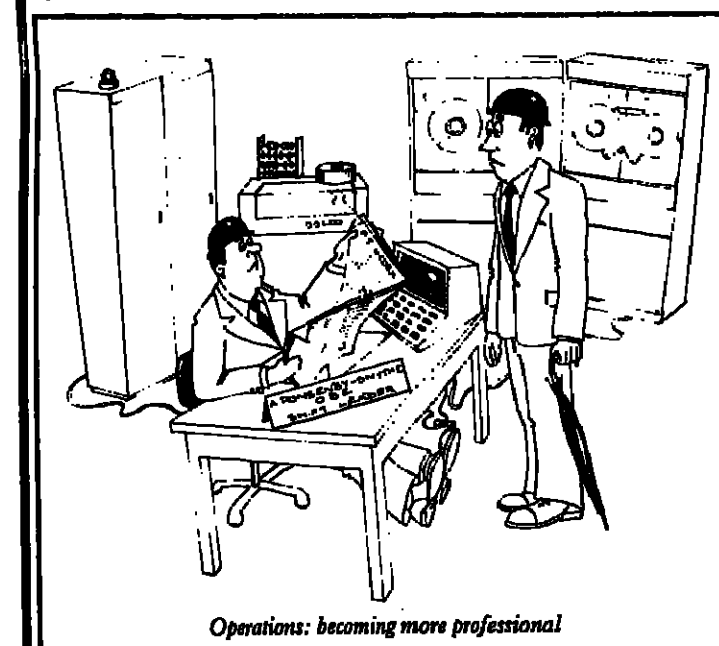
Direct action would typically include informal user training, correction of data errors and the recovery of corrupt files while systems, programming or hardware errors would almost certainly be "referred".

The job of operations analyst touches many other areas, including performance monitoring, disc space allocation and the communication of "suggestions" for systems enhancements to reduce user bottlenecks.

To obtain a shop-floor view of the operations analyst job, I spoke to Keith Fox, who worked for five years in the area of operations support before landing the plum job of communications network manager with the South-West Thames Regional Health Authority.

To quote Keith: "The role of the operations analyst is vital on any large computer site. When the user wants a system, he talks to the systems analyst and when he's got one, he talks to the operations analyst."

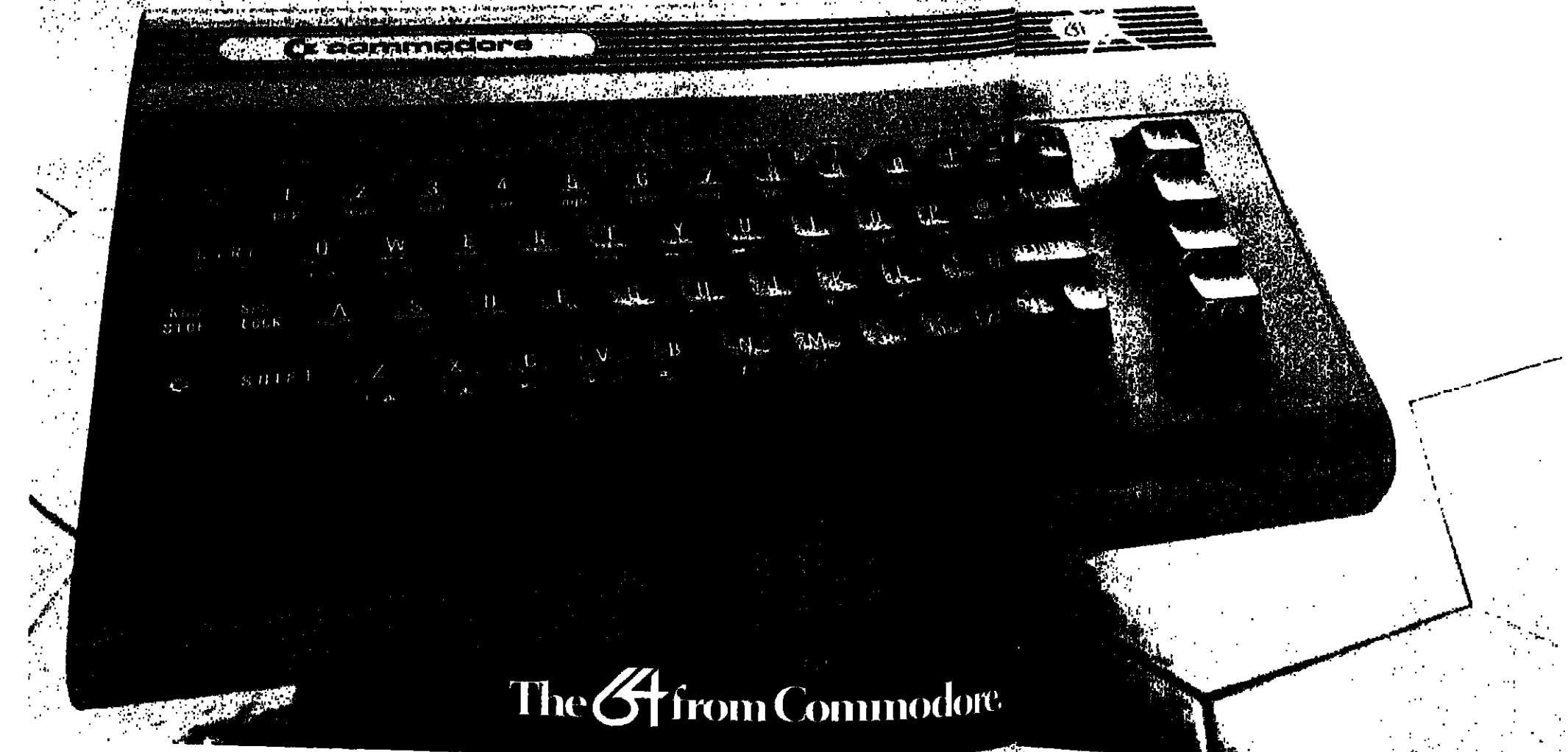
Keith also feels that the job is ideally suited to any operator with flair and initiative, the balance of all-round skills to be gained providing a natural progression into the area of operations management.



Operations: becoming more professional

Workplace is compiled by Philip Hunter and Andrew Thomas.

At £299 it's very little. At 64K it's very large.



The 64 from Commodore

This is the new Commodore 64 Personal Computer.

It costs £299. Not bad for a brilliant piece of technology with a 64K memory.

But then, it's a Commodore.

And as one of the world's leading high-performance micro-computer companies, we're not exactly unknown when it comes to outstanding achievements.

The Commodore 64's nearest rival — if that's the word — costs over half as much again.

Here is the specification, a comparison with the Apple II, and a coupon.

The rest is up to you.

1. A total memory capacity of 64K, 38K, directly available to BASIC. When not using BASIC, a full 54K is available for machine code programs.

2. Interface adaptors will allow the use of a complete range of hardware peripherals including

disk units, plotter, dot matrix and daisy wheel printers, Prestel communications, networking and much, much more.

3. A complete range of business software including word processing, information handling, financial modelling, accounting and many more specific application packages will be available.

4. Other computer languages such as LOGO, UCSD PASCAL, COMAL and ASSEMBLER are being developed. Existing VIC and 40 column BASIC programs can be easily converted.

5. The powerful sound chip gives 3 totally independent voices each with a range of 9 octave User control over music envelope, pitch and pulse shapes provides the ability to make your Commodore 64 sound like a variety of musical instruments, solo or in harmony.

6. 62 predefined graphic characters plus full alpha numerics with upper and lower case letters, all available directly from the keyboard

and displayable in normal or reverse video in any of 16 colours.

7. 40 column by 25 lines colour display. In high resolution graphics mode, a bit mapped screen gives 320 x 200 individually addressable pixels.

8. The dedicated video chip allows the use of high resolution multi-coloured "Sprites" (movable object blocks). Sprites can be moved pixel by pixel, independently of anything else on the screen.

9. Sprites can also be set up in 8 "layers" giving full 3 dimensional effects with, if required, automatic collision detection between sprites and any other screen object.

10. Machine bus port will accept ROM cartridges for many applications, including business, educational, home and leisure software.

11. A second processor option using the Z80 gives the Commodore 64 the ability to support CP/M*

*EXC. VAT-DETAILS CORRECT AT TIME OF GOING TO PRESS
*USER ONLY
*CP/M IS A REGISTERED TRADEMARK OF DIGITAL RESEARCH, INC.

commodore

For more information on the powerful new Commodore 64, and the address of your nearest Commodore dealer, telephone or write to us at:

The Commodore Information Centre,
675 Ajax Avenue, Slough, Berkshire SL1 4BG.
Telephone: Slough (0753) 79292.

NAME _____
POSITION _____
COMPANY _____
ADDRESS _____
TEL _____



"Your job's nearly finished, in fact we're just winding it up now."

PUZZLER

MY wife went to a sale last week. When she got back I asked, with some trepidation: "How much did you spend, dear?"

Not wishing to answer directly, and knowing my penchant for puzzles, she replied in teasing fashion: "I came back with exactly half my money unspent."

"But how much did you spend," I persisted nervously.

"Well, I ended up with as many pennies as I had pounds before I went to the shop, and half as many pounds as I had pennies before, she answered cryptically.

How much money did she take to the shop? See page 54 for solution.

SYSTEMS ANALYSTS/ PROGRAMMERS/DESIGNERS!

British TELECOM British Telecom Research Laboratories Research Study No 1

MAN-MACHINE DIALOGUE DESIGN

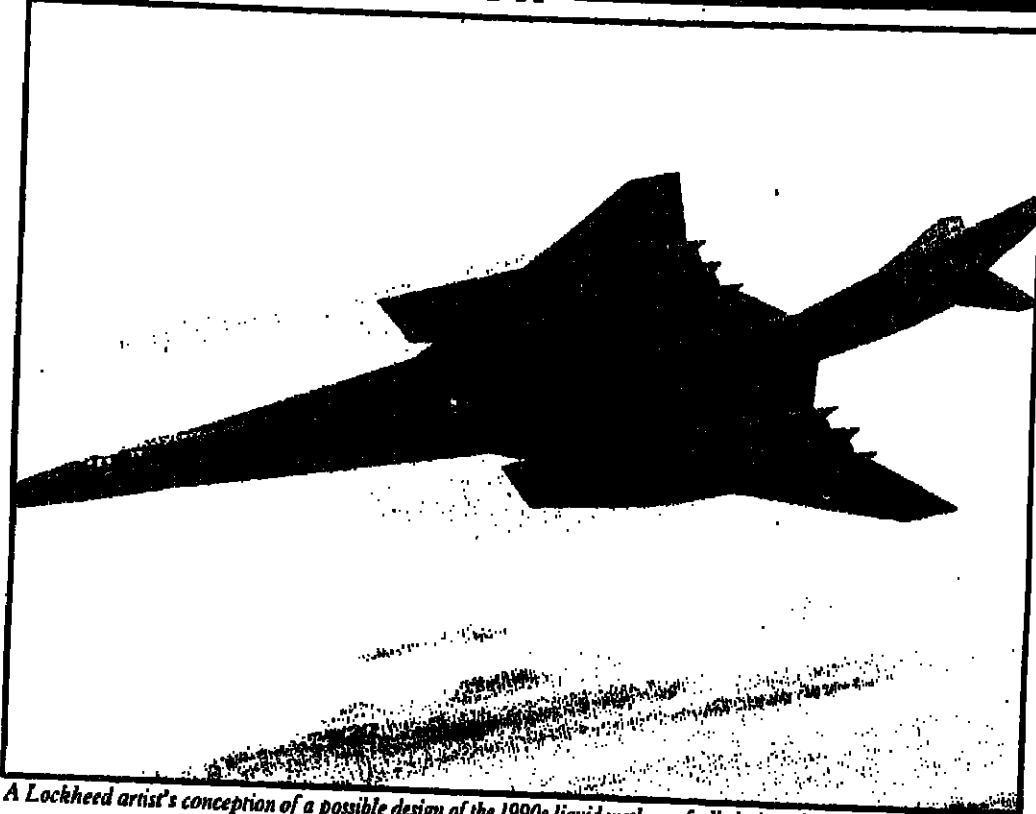
by Dr A. L. Kidd

This study provides a comprehensive review of the literature concerned with the design of interactive man-computer dialogues. Firstly, the problem of the man-machine communication barrier is introduced. The important aspects of user psychology are briefly outlined and the study stresses the need to create 'user friendly' computer dialogues, i.e. dialogues which are compatible with the psychological characteristics of the intended user population. Secondly, it sets out design principles, from the literature, for the development of more 'user friendly' computer dialogues in a wide range of applications.

Price: £8.50 plus 30p p and p. Cheques should be made payable to British Telecommunications and ordered A/C Payee

Orders to: Meridian Consultancy Services, TEL: 2: British Telecom, Research Laboratories, IPSWICH, IP5 7RE, ENGLAND. Telephone: Ipswich (0473) 644639.

FARNBOROUGH SHOW



A Lockheed artist's conception of a possible design of the 1990s liquid methane-fuelled aircraft.

You need computers to design 'em, to fly 'em, to land 'em

Kevin Cahill sees technology take off at the Air Show

IN the aircraft industry there is one thing you can be sure of. Whatever you do, you need computers.

"You need computers to design 'em, computers to fly 'em, computers to land 'em and computers to blast 'em," as one RAF man put it.

At Farnborough Air Show this year, there was a record collection of the computer-based devices needed to get an aeroplane together, to get it safely off the ground, and safely on to it again. There was also a record collection

of the devices, all computer driven, that you need if the way you want an enemy aircraft back on the ground is in tiny incandescent pieces.

Naturally enough there were a lot of micro-driven devices to hang out of aircraft so that you could turn anything you didn't like on the ground into hot little pieces too.

Amid all this destructive application of micros, mostly eight-bit, it was something of a pleasure to come across a number of devices which have at least as many civil as military uses.

Sadly, either the staff manning the missile stands did not know just what micros drove their deadly wares, or for security reasons would not name the computers.

However, the man on the Ferranti stand at least knew that the micro in the Ferranti tactical mission planner, called the Tacplan 2100, was an eight-bit device specially designed for the application by Ferranti.

Tacplan, written in Coral 66, is a clever way to work out the best route for an aircraft, tank or pre-routed missile, to carry out its mission.

Data on the route to be taken is entered into the system simply by placing a pair of electromagnetically activated wires, contained in a neat plastic case, over the turning points chosen on a map, which is laid over the Ferranti Autoplan plotting board.

The system, which is floppy disc driven, carries a 256 Kbyte store of information on maps and terrain.

When the map being used is laid out on the plotting board, two reference points on the map, expressed in longitude and latitude, are entered in the system.

The co-ordinates and the map scale enable the system to establish the table so that the placing of the cursor is correctly translated into guidance information.

When the turning points in the mission are established, the system then prepares a flight plan, which is output primarily on to whatever form of input, mag tape or solid state is to be used on the inboard navigation system.

In the course of establishing the mission route other data such as aircraft type, fuel carried, weapons load and so on, is also entered.

When the planning is complete a hard copy printout is prepared which can be given to the pilot, along with his magnetic tape cassette.

According to Ferranti, the system can be used to prepare a mission plan with 20 turning points, in under five minutes.

Manually prepared, the plan would take 20 to 30 minutes.

In modern battles, particularly those involving aircraft like the Harrier - employed in forward battle areas, with some fuel supplies and a high need for reaction and redeployment - the plan is indispensable.

So far the RAF has bought 77 of the systems.

At a more sophisticated level there is a rapidly growing demand for more advanced computer software in the field of flight simulators.

A complete simulator will include a moving platform which tilts, dips and rolls to give the trainee all the benefits of flight without the attendant risks to body and soul if he or she gets it wrong.

To drive the controls and the platform, and the graphics displays which a computer has to generate on the "cabin window" of an advanced military plane, a execution rate of over 10 Hz; 32-bit operations per second are needed.

So far most simulators are micro frame linked, but Genet Electric's Link Miles Division started building microprocessor based simulators in 1979.

The company says that the micro driven simulator was delivered by them late last year to the Finnish Air Force to train country's pilots in the use of British Aerospace Hawk trainer.

But the most advanced developments in the simulator field are in the area of computer-generated images.

This has given rise, as a USAF official at Farnborough put it, "to the 20 million simulations accompanied by the 50 million computer generated image device."

Despite the costs and the difficulties involved, both the military and the various companies involved in simulator development are spending millions of dollars in pursuit of ever more sophisticated image display.

Many pilots resent the amount of time they are now required to spend on the ground in simulators. But bosses take a different view.

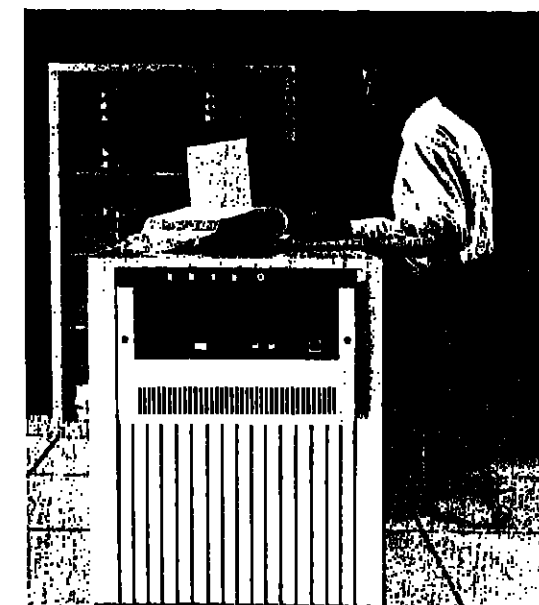
One of the officers guarding the Lockheed B1 bomber which flew to the UK for the first time for the Farnborough Show, pointed out that the plane had cost the best part of a million dollars in fuel alone to reach the UK.

"Ten hours in a simulator costs about 200 in electricity."

He did not mention the savings if the pilot flew the simulator into the ground.

For the plane at the show that would be about \$1.2 billion.

MOVE UP TO 32-BIT POWER? TWO SMALL FACTS FROM PERKIN-ELMER



For the system specifier and OEM, moving up to 32-bit is suddenly a lot easier. Perkin-Elmer announce a major price breakthrough in 32-bit minicomputers - now you can have mainframe performance at a price below what you're probably now paying for 16-bit systems.

Incredible? Read on.

OUR NEW 3210A

Custom tailor the 32-bit system you want. Fully functional 32-bit processor, chassis mounted, with control panel and two communication lines. 512KB state-of-the-art, high density memory. Optional 30 or 56 ins cabinets, DC power system, air cooling, floating point processor, add-on memory up to 4 MB.

1-off price
£20,000

with 512KB memory

Generous OEM volume discounts

Now is the time to move up to 32-bit systems for faster, more powerful and more sophisticated solutions at irresistible prices. Call Fred Mascarenhas on Slough (0753) 34511 or complete and return the coupon.

OUR NEW 3210

A complete 32-bit minicomputer system just 30 ins high. Integrated cartridge disc drive, fixed and removable storage. Up to 4MB directly addressable memory. Supports up to 32 terminals with field expansion provision.

1-off price
£34,580

with 1MB memory, 32MB disc, OS, ten communications ports

PLUS

Field proven OS/32 operating system, high-level programming languages, a broad range of available systems and application software, worldwide sales and support network.

To: Perkin-Elmer Data Systems Ltd., 227 Bath Road, Slough, Berks SL1 4AX

Name _____ Position _____

Company _____

Address _____

Telephone No. _____ CW 16

PERKIN-ELMER

X-ware®: computer power you'll like.

X-ware® is a product range, fully supported and serviced by Bell Information Systems.

■ LOCAL AREA NETWORKS based on products from UNGERMANN-BASS Inc. (baseband and broadband) for optimal integration and sharing of computer resources.

■ UNIX based software from INTERACTIVE SYSTEMS Corp. for powerful program development and office automation tools. Runs on PDP11/44 up to PDP11/70, VAX and VAX/VMS.

■ INTELLIGENT TERMINALS for user ease within a UNIX environment. Optionally with German or French character set.

■ MISTEL, a highly flexible interactive videotex system. Simplifies and improves information exchange with your customers, dealers, agents and personnel. Runs on PDP11/RSX11 and Honeywell-Bull Mini 6.

X-ware, a product and service family for friendly, extendable and customized computer power.

X-ware is a trademark of Bell Telephone Mfg Co. UNIX is a trademark of Bell Laboratories, AT&T. PDP, RSX, VAX and VMS are trademarks of Digital Equipment Corp.

Bell Telephone Manufacturing Company

a Bell company associated with
Francis Wellesplein 1, B-2000 Antwerpen, Belgium - Tel 32/31/871717 - ext 1077 - Telex 72128 BellalB

For more information, please return this coupon to Bell Telephone Mfg Co. Division Automation and Control Systems, Information Systems, Francis Wellesplein 1, B-2000 Antwerpen, Belgium.

- LOCAL AREA NETWORKS
- UNIX based software
- Configuration:
- PDP □ existing
- VAX □ expected configuration
-

INTELLIGENT TERMINALS

- Character set:
- Standard
- German
- French

MISTEL videotex system

- Configuration:
- PDP11/RSX11 □ existing
- Mini 6 □ expected

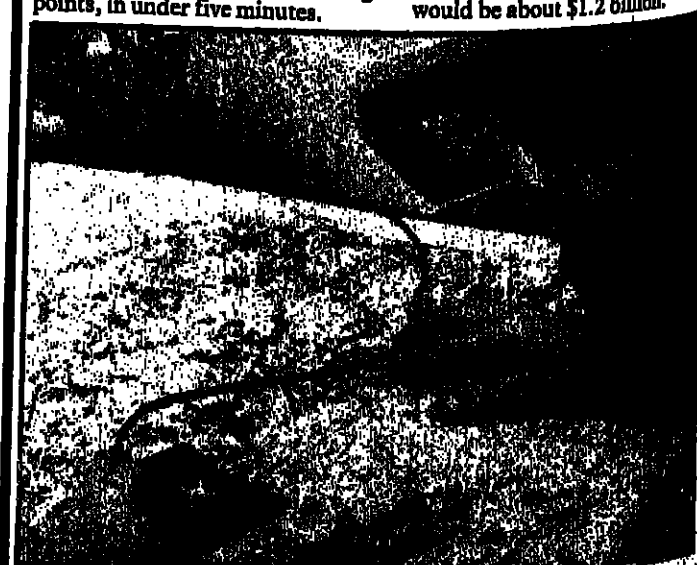
NAME: _____

FUNCTION: _____

COMPANY: _____

ADDRESS: _____

TEL: _____



Plotting the plane's route on Ferranti's Autoplan board.

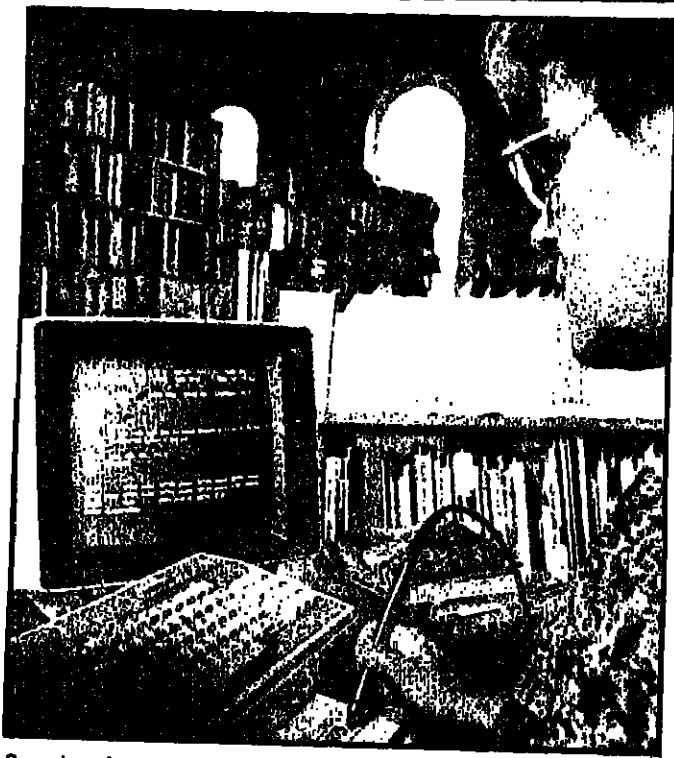
PRODUCTS 1

Bar code system for library

SOMERSET County Library is automating its service with an on-line computer system, and has chosen Photographic Sciences' bar codes for the task of labelling the 800,000 volumes currently in stock together with the associated record cards and the 90,000 new books acquired each year.

As the centre of its automated service the library is installing a Canadian-developed Gec 8000 system at County Hall in Taunton to be linked online to automatic checkout facilities in seven of its 33 branches and at HQ. In these selected locations, books will be checked in and out of the system by means of light pens linked to terminals. This scans the bar code on the book and the reader's card, automatically entering loans and returns into the main database.

The key factor in the efficient working of this system is the reliable input of data. Machine-readable bar codes were the obvious medium and Photographic Sciences, formerly Harland Data Systems, was appointed supplier. In addition to generating sequentially numbered bar codes, in high volumes, the company is able to image and print text on a variety of materials, including self-adhesive



Scanning a bar code to enter a book in the computer-based catalogue.

labels, to a quality unattainable by dot matrix or impact printers. This was an important factor in the selection process, since the labels were required not only to identify books and readers via the light pen, they were also to be used in file creation, in being compatible with the existing Browne issue ticket system and in providing eye-readable information for staff and the public.

Present plans for the library envisage six terminals at the Bridgewater headquarters, to be used by the staff for the creation of the database, and a further 30 dispersed around the branches. Of these, three will be in public use.

Photographic Sciences (CW), Phoenix House, Amsterdam Road, Sutton Fields, Hull, North Humberside HU8 0XP. Tel: 0432 335366.

Delta network is aimed at Burroughs market

DELTA Data Systems has announced a network terminal system based on its recently released range of intelligent video terminals.

Named the Delta 2000 Series, it includes a configuration which is aimed specifically at the Burroughs B20 market and has a starting price of less than half that of the B20, says Delta.

The 2000 Series features communications facilities for handling Burroughs and ICL protocols and there are plans for adding IBM, DEC, Univac and others shortly. There is also a cluster control for up to eight workstations.

The video terminals at the heart of the new system are the Delta 2200 Series and the 2830, around which Delta has designed a systems concept to enable each to grow from a standalone terminal device to a network system according to specific user requirements.

Delta Data Systems (CW), Swallowfields, Welwyn Garden City, Herts. Tel: (0707) 3381.

lation with the 2830, Delta has aimed the system at new and existing network users requiring steady expansion, as well as to those seeking to increase the scope and complexity of the terminal task; at users of heavily loaded networks where the workload needs expanding without changing the mainframe; and at users seeking to avoid terminal redundancy when a mainframe change becomes inevitable, particularly when the change is to a mainframe of another manufacturer.

The Delta 2000 Series has applications at all levels of networking, ranging from a single display terminal on a communications line to an intelligent workstation incorporating mass storage printing and local processing facilities to clusters of workstations providing a variety of multi-end user text and data processing functions.

This applications flexibility is the result of a matched set of user friendly functions including full feature ASCII display terminals oriented for text and data entry/information retrieval, for forms mode data entry, or for message switching/telex networks; local storage on floppy or Winchester discs with Delta's own File Management System, giving block

mode access to the database; in processing facilities using C, Pascal, Basic, Cobol, Fortran or Pascal; hard copy printing locally or host controlled; communications control including protocol compatibility and token clustering.

The video terminals that make up the new systems are the Delta 2201 - a general purpose video display terminal for transaction query response processing; Delta 2202 - a dual code (bit and telex) terminal for message monitoring and preparation; Delta 2203 - a forms mode terminal for high volume, field data entry and validation processing; and the Delta 2830 - a Burroughs emulation terminal.

The Delta Disk Unit offers stepped storage options of up to 1.58Mbytes on floppy disc; up to 18.7Mbytes on high performance Winchester disc; or hardcopy output, the system to support a wide choice of data mix and letter quality serial printers.

Delta Data Systems (CW), Swallowfields, Welwyn Garden City, Herts. Tel: (0707) 3381.

Audiogenic Package offers low-cost graphics launches five games

AUDIOGENIC has launched five games for the Commodore Vic home computer.

The games are sold as cartridges which can be plugged directly into the back of the Vic computer. All feature Autoload to take the user straight into the game.

In *Spiders of Mars* the user takes the part of a fly and must shoot his way across Mars avoiding the dreaded spiders and other flying creatures. The game features full graphics and classical music.

Renaissance is an Othello package with eight levels of play. Players can match the Vic or play each other. During the game, players can change sides, take back moves, and set up and play special games.

Satellites and Meteors is an asteroids game with full screen display, no borders and full sound effects.

In *Meteor Run* the player must pilot a spaceship through the meteor belt and avoid or destroy meteors and alien saucers. To help the unwary, an early warning radar screen is included.

In *Cloudburst* the player has to save the earth from a storm of acid rain and mutant cloud hoppers. Ten levels of play can be selected.

The first four games described are priced at £24.99 each, while *Cloudburst* costs £19.99. Audiogenic (CW) PO Box 88, Reading, Berks. Tel: (0734) 595647.

Package offers low-cost graphics

A LOW-COST colour graphics package has been announced by Robocom, the North London robotics company.

Robocom says its package provides all the elements of computer aided design (CAD) from direct input origination of drawings through to a plotted output in colour, for less than £3,000.

Rob Welch, graphic designer and Robocom director, said: "Our objective was to create a simple but complete computer graphics package that would be easy to use by engineers and artists alike, without previous computer experience and at a price level that is affordable by almost everyone involved in the

generation of graphics material."

The Robocom package is built around the company's Bit Slik interactive graphics system, the Apple II Europlus 64K microcomputer with twin disc drives, and the new Hewlett-Packard 7470 A4 size plotter. It incorporates full technical drawing facilities including special routines for dimensioning and the execution of schematic diagrams.

It is not restricted to use with the 7470 plotter. It can support a wide range of plotters from A4 to A0 size and can interface with most of the major manufacturers' plotters including Calcomp, Watanabe, Tektronix and Hewlett-Packard.

Subsystem intended for a variety of machines

LATEST hard disc subsystem for personal computers from Independent Computer Engineering (ICE) combines the British-made Rodime R0 100 Series 5¼in Winchester disc drive with Cipher's Quarterback ¼in cartridge tape streamer.

The subsystem, called the WDS 101, is complete with a cold boot card, and is available for Apple II, Apple III, and a variety of 280 and 5100 bus machines including Superbrain, British Micro, Gemini, Cromemco, IBM Personal Computer and Sirius.

The Rodime 5¼in Winchester disc drive, for which ICE is the exclusive UK distributor, provides formatted capacities of 3, 6, 12 or 20 Mbytes.

MTBF (mean time between failures) is 12,000 hours and there are no electrical or mechanical adjustments. Features include overlap seek, rotary head positioner and integral microprocessor control with on-board diagnostics.

The tape streamer uses standard ¼in 3M-type removable tape cartridges which can store up to 20 Mbytes of formatted data per cartridge. The tape speed of 90 inches per second allows a 6 Mbyte Winchester disc to be backed up on to tape in a little over a minute.

Independent Computer Engineering (ICE), 16/18 Littleton Road, Ashford, Middlesex. Tel: 0782 47271.



Apprentices demonstrate the Plessey telephone simulator.

Phone aid for children

A PUBLIC telephone system simulator for instructing educationally sub-normal children has been developed by Plessey.

The simulator consists of a specially adapted pay-phone, a standard handset and a control unit, and operates without being connected to the British Telecom network. All facets of the telephone system are accurately simulated to enable children to receive comprehensive instruction in the use of the telephone.

Apprentices developed the simulator after an approach by Winchester Special School where teachers wanted to familiarise pupils with the public telephone system. Previously, telephone instruction had proved difficult because children learning from public pay-phones could not be supervised adequately and confusion frequently occurred.

The Plessey technique entails demonstration and use of the telephone code and number system within the school. A main unit, incorporating solid state black chip technology, is operated by the teaching staff and connected to a call box in another room. To the pupil the system appears to be a normal telephone installation but it has the added advantage of close supervision.

Various tones can be simulated on the control box and amplified for teaching and the children are given a pre-recorded number to ring. Even if the call is made before the teacher with the control box may still talk to the child.

Plessey Controls (CW), Poole, Dorset. Tel: (0202) 675161.

Video touch terminal

THE video Touch Terminal from Touch Technology is a new development of the company's established Touch Terminal. The new terminal allows real time video input to be displayed on the terminal screen and freely mixed with digital data from the host computer.

The Touch Terminal does not need a conventional keyboard. It is driven by the user by touching the terminal screen. This consists of a number of user-programmable touch points. When the screen is touched, the terminal sends co-ordinates of the point that is touched to the host computer. The host computer can then interpret the information and take any desired action.

Touch Technology (CW), Woodlands Road, East Bergholt, Colchester, Essex. Tel: 0206 238181.

Network monitor

MORE EFFICIENT communications networks can be provided using a new computerised telephone traffic monitor, the BP-80 Telegator, according to the supplier.

Available from David Bisset of Redbourn and designed by Borge Pedersen of Denmark, the BP-80 monitors up to 32 exchange lines. Data is stored, results are analysed then printed out at pre-programmed intervals.

David Bisset (CW), 52 Luton Lane, Redbourn, Herts. AL3 7PY. Tel: (0582) 2637.

PRINTERS AND TERMINALS

Boris Sedacca opens this four-page feature with a look at the European scene

Distributed processing set for a fivefold rise

IT is no longer clear just what a terminal is. In earlier days, the old-fashioned teletype embodied everyone's perception of a terminal.

With printers, it is an easier matter. The basic requirement of a printer is that it provides hard copy output. But a terminal can be anything from a simple portable hand-held data capture system to an IBM 4300 series mainframe connected to a larger 308X series mainframe using the latter's extended architecture feature.

Today, the terms "terminal" and "distributed processing" are almost interchangeable. According to a Eurostat study carried out by International Data Corp, the distributed processing market was initially dominated by minicomputers, but clustered processing terminal systems now earn the largest part of this revenue.

The total distributed processing revenue from shipments for its three main sectors - minicomputers, small business systems and clustered processing terminals - will rise from \$500 million in 1980 to \$2.8 billion in 1986, says IDC.

After a slow start IBM's 8100, classed by IDC as a clustered processing terminal system, is beginning to make its presence felt in the marketplace. Some 800 clusters were shipped in 1980, but this figure will show a dramatic rise to 17,000 by 1986, or an annual growth of 86%.

"The decision to implement distributed processing remains firmly in the hands of DP departments," says IDC. "In less than 50% of cases were local users consulted."

The top 11 European vendors of clustered processing terminals together constitute almost 80% of the market. Philips is the major vendor with 15% of the market, but closely followed by Datapoint and IBM. IBM's position in the league is due to the impact that the 8100 is already having in Europe.

The number of screens attached to a clustered processing system varies widely between vendors, ranging from 2.5 to 70 plus, but overall there are on average 5.5 screens attached to a system. In 1980 IDC estimates that 43,000 clustered processing terminal screens were shipped into Western Europe and that this will increase to 200,000 units by 1986.

The number of screens shipped into distributed data processing (DDP) usage is estimated to be 50% of total shipments during 1980 - a proportion which varies by country with France lagging behind the rest of Western Europe, while Spain and UK are the leading users.

"One important consequence of IBM's introduction of the 8100 is that it has galvanised the industry to look even more closely at DDP. After the initial over-reaction to the 8100 gave way to the realisation of teaching problems, the industry may have to start gearing itself up again to a product that is here to stay for some time," says IDC.

"In all the country markets, IBM's strategy of putting in test or pilot machines and getting the user hooked is paying off overall even though some 8100s are being sent back. This is a phased approach in that a number of users have already gone through a trial/development phase and are now installing and running production machines.

At the same time new batches of users are embarking on the preliminary phase and indicating

heavy order levels in some cases, should the 8100 prove successful.

"The IBM 8100 embodies the most radical development in computer system architecture from IBM's Data Processing Division (DPD) since the introduction of the 360 and OS in 1964. It has important implications which go far beyond the 8130 and 8140 models which were initially announced in October, 1978."

The 360/370 architecture has many properties which seriously constrain its ability to support information systems in the future, says IDC. Changes in the cost of memory and logic circuit components, of secondary direct access storage, and of software development, have not yet lived up to the great expectation which has caught the imagination of so many in the industry. After a few notable failures, including IBM's OS/6 offering, there are signs that more successful products are coming on to the market.

Slaments is already achieving bulk shipments with its PT80 models and the Japanese are expected into this arena within the next two to three years. Long term success seems to be assured for this technology as the demand for graphics and coloured printing starts to build up in earnest during this decade," says IDC.

It adds that the line printer market is far from its death bed. Boosts in this area have come from the influx of the low cost, versatile dot matrix line printers where demand is most strongly felt in the higher end of the SBS market.

IDC predicts that the market for such printers is also destined for success now that the teething problems have been overcome. High priced page printers had shipments of about 300 units during 1980 with IBM cornering 60% with its 3800. This will always be an area far removed from the volume shipments achieved with the other technologies.

Terminal printers are expected to have a slower growth rate - 13.4% a year in the longer term and 21.7% in the short term. During 1980 they dominated the printer market place with over 40% share of all units shipped. However, by 1986 the printers used with desktops will be in pole position with printer terminals dropping into second position with a market share of under 30%.

The serial character printer market in 1980 was cornered by Diablo, Olivetti and Qume who between them had over three quarters of the shipments. It is in this segment that the Japanese vendors - NEC, C. Itoh and Ricoh - have made their largest penetration, taking almost 14%. However, although they are expected to increase their share in the 80s they could come across a strong challenge from European vendors in the shape of Olivetti, Olympia and Triumph Adler. These European manufacturers have the opportunity of reaping economies of scale from their electronic typewriter activities where shipments of daisywheels are vast.

One area where low cost, low speed printers are making a large impact is in the serial dot matrix market segment, says IDC. During 1980, the Japanese vendors made a strong showing capturing 11.6% of the total serial dot matrix market. They are expected to penetrate this market even further with Epson and Oki Electric leading the way.

In 1980 the US-based vendors held over 50% of the serial dot matrix market with IBM and Centronics achieving top shares. Unlike the serial character market the serial dot matrix sector is littered with vendors. It is an area which has attracted a number of

European vendors led by Mannesmann-Tally and Olivetti. Some of these produce serial dot matrix printers mainly for their own systems. They tend to be SBS vendors and include Olivetti, Logabax, Philips, Kienzle, Nixdorf and Triumph Adler.

It remains to be seen whether IBM will make a similar move to other vendors and produce a high density matrix printing device to offer corresponding quality matrix printing.

With regard to the word processing market, IBM now manufactures its own daisywheel printer for use with the Displaywriter.

Another printer designed for use with word processors is the 6640, an ink jet printer, which uses continuous stream technology. This was the first ink jet printer used for computer output and has received only limited market success. It is used exclusively on IBM's

standalone word processing system, the Office System 6. In fact so many users did not want the ink jet printer that IBM was forced to offer the Qume daisywheel. Because the printer uses dot matrix technology some users were dissatisfied with its quality of output.

The IBM 3800 laser printer was first introduced in 1975, and has been reasonably successful. It was planned initially for online operation on the OS/VS systems. However the 3800 quickly acquired an offline magnetic tape. The printer uses continuous form paper and is generally regarded as a true workhorse.

In direct competition to 3800 is Xerox's 9700, which was an update on the 1200. The 9700 uses sheet feed paper and is able to operate as a word processor printer through a communications interface to the Xerox word processor.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

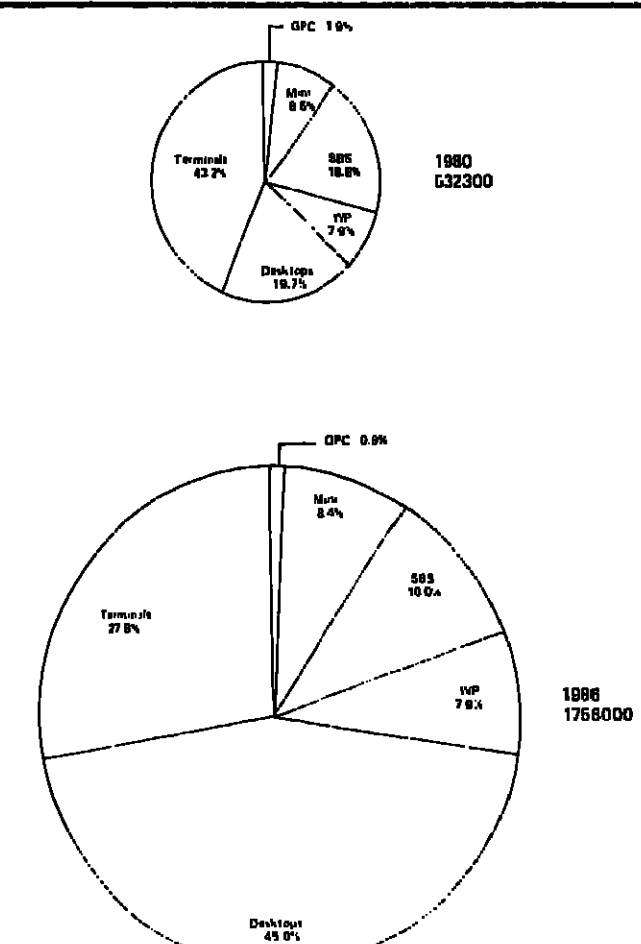


Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

Figure 1. Printer units shipments 1980/86 W. Europe - by system type.

PRINTERS AND TERMINALS

Robert Fenner investigates a project for a high-speed laser printer which never became a commercial reality

The singular case of the printer firm and the vanishing laser device

IN 1979 there was an American company called Documation. It made high-speed impact printers, and it sold them into the IBM plug compatible market.

The impact range, as the printers were called, had a maximum print rate of 3,000 lines per minute, and this, then as now, made them the fastest impact printers in the world.

Documation, however, had plans. The impact range was to be expanded, with a new top end model running at 3,800 lines per minute. More impressive still, the company was announcing its intention to move into the laser printer market.

In the annual report published that year, Documation said: "Our engineers are completing development of laser page printers with a combination of more func-

tions and greater versatility than models currently available."

There was one feature, in particular, that made the announcement impressive. The print speed claimed for the new machine was 27,000 lines per minute - faster by a wide margin than any other non-impact printer on the market.

But the printer did not arrive and, three years later, there is still no sign of it. IBM, Honeywell, Siemens and Rank Xerox dominated the high speed market in 1979, and they dominate it now.

On November 26, 1980 all of Documation's common stock was acquired by Storage Technology.

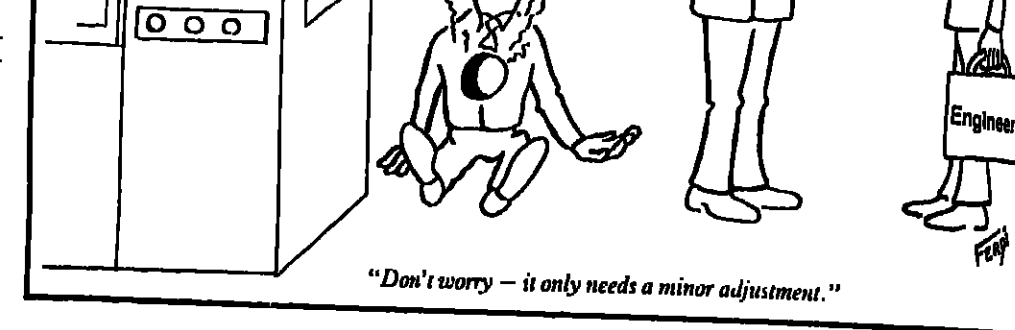
Documation had been losing considerable sums of money before the merger, and by acquiring it, STC hoped to alter the company's fortunes, and buy for itself an impact printer range, a customer base

and a European manufacturing facility through which it could expand.

In this STC has been successful - European sales of the Impact range have doubled since the takeover, and STC's European subsidiaries, including the European wing of what was Documation, have doubled in size in financial terms every year.

Figures recently published show that revenues for STC as a whole during the second quarter of this year increased 26% to over \$270 million compared with the same period last year, while net income increased by 33%.

STC's affairs are not, however, running as smoothly as it might hope. As a result of increased competition in the disc drive market, one of the company's strongest areas, STC has suffered from the



postponement of some deliveries and the outright cancellation of others. The stated response to these conditions from STC is the introduction of "several new marketing programs" and a "reduced production of selected products".

All this may well, of course, have had some bearing on the future of the laser printer, which Documation was to sell under the

name of the Laserpage/18. Certainly the UK as well as the European marketing wings of STC are reluctant to discuss the likelihood of the machine ever appearing. Clive James, UK marketing manager, said: "The situation at the moment is that before we sink our investment in laser technology we must complete a full examination of the market."

At this stage nobody is prepared to admit that plans for the printer have been dropped. At STC's European headquarters in London Geoff Benjamin, a financial director of the company and a former member of Documation's management team, insists that the Laserpage/18 would not have survived this long had not STC acquired the company which developed it.

"Documation's printers were and are good, reliable products," said Benjamin. This was partly why STC bought the company. So why had Documation faded so badly? "Management", according to Benjamin, "Documation's managers were over-ambitious. The company over-extended itself in its manufacturing base."

The European plant which Documation owned at Finglas, Dublin is now used to manufacture not only the Impact printer range but also STC's tape and disc products. "Documation only used 20% of the Finglas base," said Benjamin. "The company could have restructured itself to cope with its financial position at the time. But shortly before the merger the joke among Documation's employees in Ireland was that the plant shop was so vast that British Leyland could put a fleet of cars through it."

STC's attitude to Documation is reflected in its attitude to the laser printer. The implication is that STC as a company sees no need for developing a machine which runs at 27,000 lines per minute.

Colin Cook, marketing manager in Europe, Cook is anxious to deny that the company has spent as much on research and development of the project as Documation.

He described the Laserpage printing method as "reprinting forests". "Who needs all that information in printed form? Data in these quantities could be accessed through terminals," he explained.

This questions the need for laser printers at all. Clive James of STC could not recall ever having seen a laser printer running without some form of impact printer acting as back-up. "What is the point of making that kind of financial outlay?" he asked.

The case against the machines was more forcefully put by Ray Saunders, computer development manager with Grievecon Grant and a member of the IBM User Group Council. "When I evaluated the high-speed printer market some two to three years ago it was very expensive," he said. "There were, for example, the IBM 3800 and the Honeywell PPS. And Honeywell needed special paper. They could only supply print in one colour, and we needed more. The quality of impact printers was good, and so we stuck with them. Besides, I can't justify replacing three impact printers with one laser printer. It

would be a bad risk." Laser printer manufacturers deny that these arguments apply. IBM's 3800, according to Steve Escott of systems manager in the 3800 group, has a number of advantages over impact printers. Its greater speed (360 lines per minute) means that it user saves in both floor space and power quantity in comparison with a multiple impact printer device.

The paper quality need not be appreciated from that request by impact printers and, further, the 3800 can run millions of printed forms of the type required for instance, by mail order companies. Paper size, paper quality and even the colour of print can vary from one run to the next.

Laser printers generally offer flexibility in choice of character sets, pitch and line spacing," according to Escott.

Sperry Univac and ICL, the market the Siemens printer at their own labels and specifications. Rank Xerox and Honeywell, similarly enthusiastic about respective machines, and all of their recent enhancements sales orders.

The high-speed, non-impact printer market is healthy and optimistic, and does not take seriously any threat posed by users of slower impact machines.

But if the market is healthy, also small and highly specialist. Ray Saunders of Grievecon Grant chose to remain with STC's impact range because he saw no need for a larger financial outlay. Cook of STC agreed. "Some of our customers will never require a laser printer," he said.

And he added, somewhat fully: "STC likes to be the first into a market. This one is already occupied by IBM, Rank Xerox and the others." STC felt, perhaps, that there is no room, as well as no need, for a printer like the Laserpage/18.

Whatever the reason, production of the machine is not as far ahead. Documation's laser printer, which STC claimed to have saved from oblivion, is to be dropped after all. "I believe the decision has been made," said Gordon Swartzfager, vice-president of communications at the company headquarters in Louisville, Colorado. "We probably will not produce it."

He seemed to encourage others at STC, another laser printer being introduced in its smaller, cheaper and more flexible, occupying a market niche distinct from that inhabited by the 3800 and other devices.

And that, perhaps, is a shame. Because Documation's Laserpage/18 was not merely a printer. It was a development which had been shelved. Somewhere in the world, Florida, Documation had headquarters and a laser printer was built and was shown privately to prospective customers as long as a year ago.

It is probably still there now. In any case, STC's marketing and sales staff will have pictures of it. They will say, "Look, we've got a laser printer. It's clean, it's new, it's a

PRINTERS AND TERMINALS

Japan leads at the low end of the printer market, but has yet to conquer other sectors. Jon Whiteley reports

When will the Japanese invade?

JAPANESE computer manufacturers have a long way to go on their home ground to ward off competition from the US. Japan is still a net importer of computer equipment, although Fujitsu recently ousted IBM from the number one position in Japan.

In contrast to her other industries, Japan's computer manufacturers have not waited to clean up the domestic market in the benign shade of government protection before embarking on overseas conquests. They have adopted a different approach.

A number of specific market areas have been identified and attacked in Europe and in the US, in some cases with remarkable success.

At the top end of the computer market, large IBM-compatible mainframes made by Hitachi, Fujitsu and others have been selling well worldwide. The recent "Japscan" scandal, however (in which the FBI has charged executives of Hitachi with stealing IBM's secrets), may precipitate protectionist feelings followed by action in the US.

At the opposite end of the market small matrix printers which can cost as little as £200 and produce hard copy for microcomputers are almost all made in Japan.

Some US and European manufacturers who used to supply these low-cost products to personal computer users have conceded defeat to the Japanese, complaining that without the economies of scale that the Japanese enjoy, production costs are too high. This is a curious argument, because the Japanese must have started from the point of zero production where there are no economies of scale.

More convincing is the parallel that can be drawn between the production techniques used to produce consumer electronic items such as televisions and video cassette recorders and those that are used to make simple peripherals.

A revealing demonstration of this is to be found in the example of C. Itoh CT-101 visual display unit. This screen clearly competes with one of the few *de facto* standards in computer terminals, the Digital Equipment VT-100. Despite the fact that the CT-101 was designed by some American engineers and it is marketed worldwide by a US-based trading company, it is made in Japan.

What is interesting about the manufacturing plant is that it was previously used to produce colour televisions. This suggests that C. Itoh is using consumer electronics techniques to make this computer product.

The Japanese rarely take the risk of trying to open up a market for a completely new type of computer product, but if the parallels with the consumer electronics industry are significant, this could change. Perhaps a computer version of the hugely successful Sony Walkman will be seen on the streets in a few years' time. For the moment, however, the Japanese are playing it safe.

Japanese companies have refined existing designs and used their superb manufacturing skills in making low-cost matrix printers. The microcomputer was born in the US, but you will probably find a Japanese printer with an Apple micro these days.

Centronics was the US company with the biggest stake in this kind of high-volume, low-cost product. It has found the Japanese products very difficult to compete with, and it seems to have withdrawn from the market a little sooner to lick its wounds. Now that Control Data has bought a big share in the company, Centronics may return to compete vigorously by offering a restructured product line, but the very bottom end of the market is likely to be shared between companies such as Epson, Oki and Seiko - all Japanese.

The standard printer to be supplied with the IBM personal

computer in the US is none other than the Epson MX80.

Epson wears the laurels of market leader in the UK and the US. Epson UK claims to have 65% of the market. Although it is difficult to define clearly the market for a particular type of product, this figure claimed by Epson gives an idea of the company's dominance of the market for matrix printers with speeds of up to 100 characters per second (cps). Epson has achieved the lion's share by selling about 4,000 units per month.

Epson's arch rival, Oki, has a slightly different story to tell. As its name suggests this company is also Japanese, but it builds some printers at the plants of its US subsidiary, Okidata. Unlike Epson, Oki sells exclusively through a UK-owned distributor into the UK market. The company that has secured this deal is X-Data of Slough.

X-Data recently celebrated the sale of the 10,000th Oki printer in the UK. Most of these sales were of the low-cost matrix printer, the Microline, which accounted for about 85% of the total. This product is seen by many as the direct competitor to the Epson products, and X-Data puts Oki in close second place for market share with 25% to 27%. X-Data claims Epson accounts for 30%.

Part of the explanation of the disparity between the two companies' figures may be that X-Data uses a broader definition of the legitimate market to include some faster and more expensive Oki line printers. X-Data emphasises the differences rather than the similarities between the two companies' products.

While companies like Epson, Oki and C. Itoh are determined to have their low-cost printers selling like hot cakes from every High Street micro shop, another Japanese company, Fujitsu, is more interested in attacking the microcomputer OEM markets.

This electronics and computer giant has a small, recently established subsidiary in London which is marketing a very limited number of the parent company's computer products in Europe. These range from the Facom IBM-compatible mainframes through Winchester disc drives to medium-speed matrix printers.

Fujitsu's daisywheel printer is being sold through distributors, as is the company's matrix printer, but the company would like to secure substantial OEM contracts to have these printers incorporated into small business and word processing systems. The cost of the printers starts at over £1,000 and Fujitsu has made a clear decision not to move into the very low end of the market.

Further up-market, Fujitsu has some line printers of speeds from 300 to 1,400 lines per minute (lpm) and these will presumably have to lure customers away from companies like Centronics and Control Data, although it will be some years before the seriousness of the Japanese challenge can be assessed. Fujitsu will have to build up stable relationships with OEMs, and this can take many months or even years in some cases.

Future product offerings could include a laser printer which is already selling in the US.

UK printer markets are comparatively new territory for the Japanese, but US manufacturers have been selling printers in the UK for a long time. Anadex is one US company which used to sell at the low end of the matrix printer market, but which has now changed its strategy.

As a privately-owned company, Anadex can afford to be coy about its profit figures, but it appears to have remained a successful and steadily growing company with the help of a change in strategy.

Anadex was one of the first companies to sell its products into the low-cost printer market, but re-

cently the DB8000, its mainstay for this market, ceased production. Another established model, the 9500 series, is still selling, but clearly it has lost the appeal it had when it was launched. It was then some way ahead of the competition.

Mannesmann Tally is a West German company that is feeling the heat from the Japanese competition in low end printer markets, but it is proud to be the only West European manufacturer that is still in the running. The company is committed to keeping its printer manufacturing in West Germany, so it must tailor its marketing to this manufacturing resource.

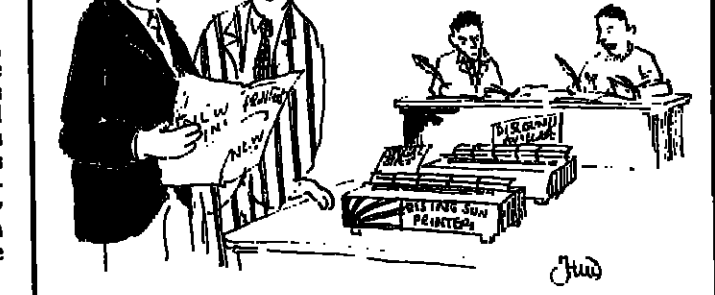
In keeping with many West German companies in other fields, Mannesmann Tally is selling on quality and not primarily on price. There are some surprises to be found among printer manufacturers and distributors. One of these is the High Wycombe-based Walters Microsystems and its distributor, Impact Data. Walters' first venture was a matrix printer called the Dolphin. This unit contained a Japanese mechanism from Seiko - only the casing was added by

Walters.

The new Walters 120, however, for which Impact Data has the sole distributorship, is the company's own design and is manufactured at High Wycombe. This includes the populating of circuit boards with components and the manufacture of chassis and case. Only components such as the ribbon cartridge, the print head and the motors are bought in.

As the model number suggests, the Walters 120 prints at 120cps; it can print to 132 characters wide and it is designed for use with plug-in interface modules (RS232, parallel and IEEE488). The price of about £400 brings it into competition with some of the best selling Japanese models, but Impact Data is confident that it can take around 5% of the market which suggests production levels of a few hundred per month.

The Japanese have not finished gaining market share from older established UK, European and US printer companies, particularly in the mid-range and markets above this. But VDU markets are still dominated by the well known US companies and a sprinkling of UK



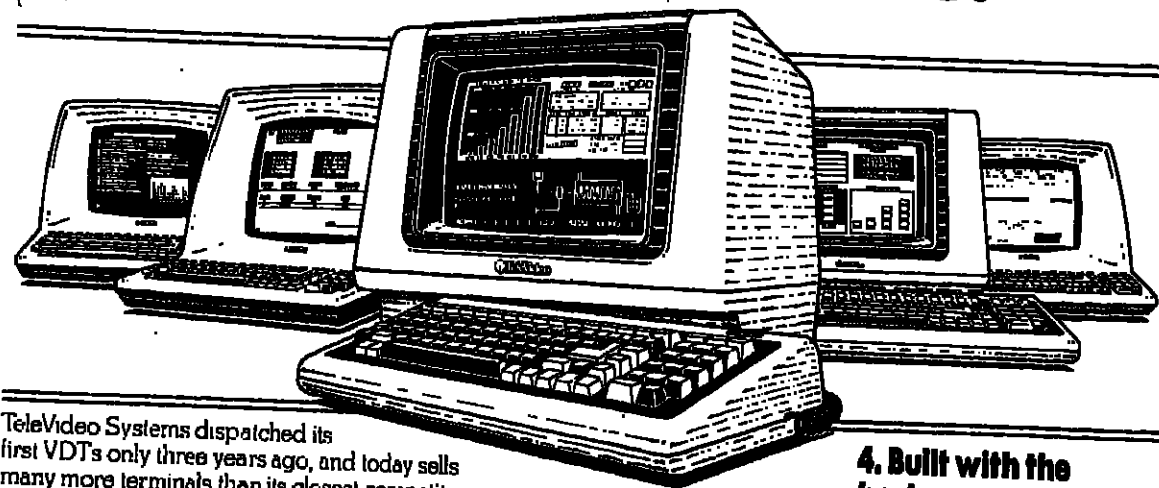
firms who are finding that increasing specialisation is often the answer.

There are a number of explanations for the contrast between the high degree of penetration of the Japanese into some UK printer markets and the low level of penetration into screen markets. One of these is that the Japanese are not very good at designing firmware which could have to be reverse engineered for a complete emulation of an established terminal.

Another explanation is that both printer and VDU products are originally designed for the Japanese market and therefore for printing Kanji characters. It is supposed to be more difficult to convert VDUs to display Roman characters than it is to make the equivalent conversion to printers.

An increasing number of VDUs sold in the UK and internationally are being made in the Far East, but this could be a product that will pass the Japanese by. The new wave of machines are designed in the US or Europe and manufactured in countries such as Taiwan which offer low labour costs. The trends indicate that Japanese-made VDUs will not grab the same generous share of the market as their matrix printers have.

Why TeleVideo is the world's leading supplier of computer terminals.

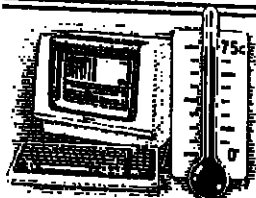


TeleVideo Systems dispatched its first VDTs only three years ago, and today sells many more terminals than its closest competitor. Excellent performance and competitive pricing have earned us this leadership position.

1. A range of terminals that sets the quality standard.

Our complete product range offers features to suit your requirements, from our conversational 910, through our smart 925 and 950 models.

2. Our reliability rate is the highest in the industry.



Stringent controls at every step from design to delivery assure high quality. Checks include five days of thermal cycling and testing.

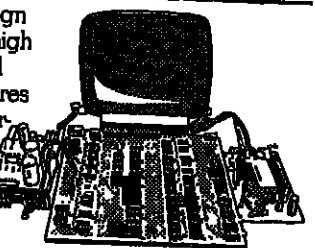
3. Fast delivery/No waiting.

Because we hold stock of all our VDT terminals, we are able to dispatch no later than the next day we receive your order. No other manufacturer can make that claim.



4. Built with the best components.

Single circuit board design and the use of the same high quality components in all TeleVideo terminals assures high reliability and performance. We put the best components in, so you get the best performance out.



5. Using is believing.

All our models are designed for maximum user comfort. Every TeleVideo terminal offers fine character dot matrix, sharp contrast between characters and background and a black-on-green, non-glare, easy to read screen.

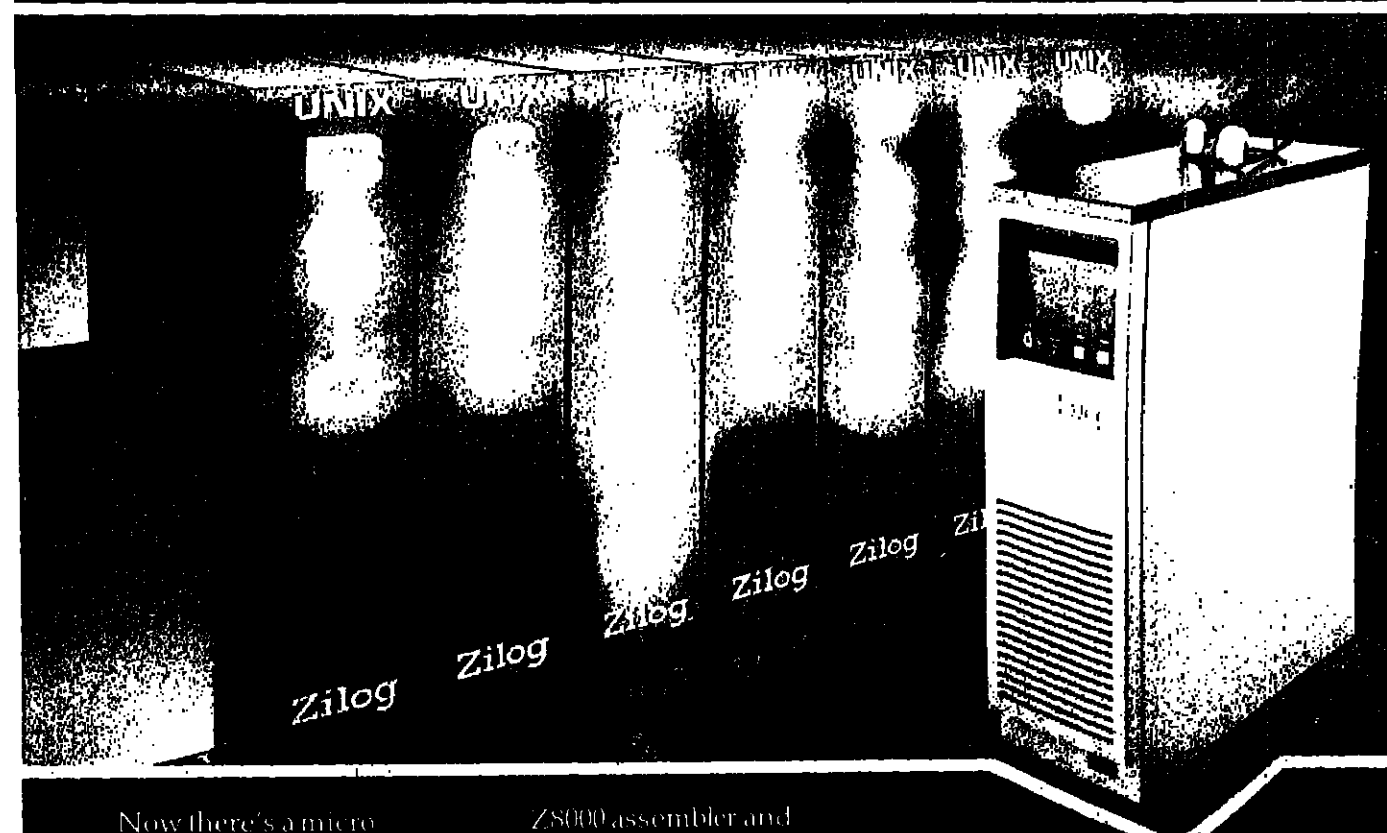
Let TeleVideo put its experience and leadership to work for you, and help solve your business needs with terminals whose performance and quality have made us the market leader.

TeleVideo authorized distributors offer sales and service throughout Europe. For more information contact: DATA TYPE TERMINALS, Unit 213 Springvale Ind. Estates, Cwmbran, Gwent NP44 5YR, Wales, Great Britain. Tel: 497906. Phone: 6333-65308. MID-ELECTRON LTD., Mid-Electron House, Nottingham Road, Belper Derby, England, Tel: 377879. Phone: 44332077382.

TeleVideo Systems, International Limited, International Chubbam (09505) 6464, Telex: 899322 TELVID

TeleVideo Systems, Inc.

Zilog's new System 8000 speaks seven languages - fluently!



Now there's a micro computer that speaks seven high-level languages at a price that won't leave you speechless.

The Zilog System 8000 Models II and III are general purpose, time-sharing computers that feature the powerful UNIX operating system, with enhanced System III capabilities. They are especially attractive since all the software needed to make programming more productive is of the highest quality, and is accompanied by superb documentation.

For example, commercial users can select from high-level COBOL and BASIC business languages; systems programmers can select C,

Z8000 assembler and PL/ZYS and technical users can opt for FORTRAN 77 or PASCAL. A comprehensive range of packages are available, including advanced word processing, financial modeling, general accounting and data base management systems. Inside every System 8000 are the high performance VLSI components that you have come to expect from Zilog.

Zilog's new System 8000s, Each 8-user system is equipped with 256 Kilobytes of parity memory and an 18 Megabyte Winchester disk for on-line storage. Optional ECC memory and cartridge tape or floppy disk back-up are offered. From around

£8,000 they are the powerful entry level systems that speak UNIX like a mum for micro prices. To find out more, speak to us on Maidenhead (0625) 39200.

Zilog (UK) Ltd., Zilog House, Moorbridge Road, Maidenhead, Berkshire SL6 8PL. Telex: 818659.

£8,000 they are the powerful entry level systems that speak UNIX like a mum for micro prices.

To find out more, speak to us on Maidenhead (0625) 39200.

Zilog (UK) Ltd., Zilog House, Moorbridge Road, Maidenhead, Berkshire SL6 8PL. Telex: 818659.

Zilog
an affiliate of
EXON Corporation

Pioneering the Microworld

UNIX is a trademark of Bell Laboratories. Zilog is a trademark of Western Micro Electronics Inc.

PRINTERS AND TERMINALS

Suppliers of dot matrix printers must offer more functions or lower prices . . . Ken Salmon reports

A revolution sparked by multi-function machines

THE time-honoured image of the computer printer has changed little over the years at an initial glance. It is still printing letters, numbers and symbols on to endless reams of fan-folded paper, albeit more reliably today than in the past.

Recently, however, a printer revolution has been quietly taking place. This has been precipitated by the large number of new application areas being opened up by increasingly sophisticated mini and micro systems.

It now appears that the days of the simple printer, capable of printing only simple alphanumeric characters, are numbered. A whole new generation of printer products is available to complement the multi-functional nature of today's computer products.

After all, it is really necessary to purchase both a daisy-wheel printer for final copy and a serial dot

matrix printer for high-speed drafts, when there are dot matrix machines which will produce draft copies at about 400 characters per second (cps) and acceptable correspondence quality print at a speed of about 100 cps.

There will, of course, be those



who will always require the very high quality print produced by a daisy-wheel and who are ready to accept the low speeds of such devices. But it is now becoming difficult to discern without the use of a magnifying glass that dot matrix correspondence quality is, in fact, dot matrix. The dual-purpose data

processing/correspondence quality dot matrix printer at the price of single machine and occupying the space of a single machine has well and truly arrived.

This is only a part of what is now being called multi-functionality. Hand-in-hand with the ability to print high quality correspondence characters goes a whole host of paper handling facilities such as automatic front-feed devices and hopper-based sheet feeders to enable single sheet letters to be handled effectively and efficiently.

Many of these single sheets are pre-printed with logos and other paraphernalia, and it is sensible for the printer prints these while it is printing the main copy. In fact, most dot matrix printers of the new generation are capable of graphics printing in one form or another, so providing the user with the choice of using pre-printed forms or printing the letterheads

Some dot matrix printers offer OCR characters, but can they improve on current rejection rates?

himself. There is a lot of activity in the field of graphics, and it may be significant that 15 leading companies, among them DEC, Tektronix, Intel, ICL and Mannesmann-Tally, have adopted two new graphics standards based on ISO guidelines. One of the latest industry buzzwords is "business graphics"

which means the computation and visual representation of business statistics. These are presented in a clear and concise manner to enable one to grasp information in picture form rather than having to plough through mountains of figures.

Business graphics can be significantly enhanced by introducing colour into the output. This is a function that dot matrix printers are well suited to. Two-colour printing in black and red has been around for many years, but only recently has four-colour printing been available with red, blue and green in addition to black.

When one thinks about the way in which colour images are formed in glossy magazines, and even television, the full impact of what dot matrix technology can offer is realised.

Another area to which dot matrix technology can be applied is in producing optically-readable data. There are two major systems in widespread use - barcodes and OCR characters. Printers exist which will produce barcodes and OCR characters in addition to normal printing.

Much of the above refers to the flexibility and multi-functionality of serial dot matrix printers - printers with a single head moving horizontally across a sheet of paper. But dot matrix-based line printers have been available for some time, and it is well within the capability of a 600 line per minute line printer to offer dual data processing/correspondence quality printing, graphics, host-defined symbols loaded into the printer through the interface from the host, colour and variable density plotting as well as barcodes and so on.

Ken Salmon is Southern and account manager for Mannesmann-Tally.

PRODUCTS 2



The Bowa 308 guillotine from Alacra.

'34% more throughput'

A GUILLOTINE, the Bowa 308, for separating computer stationery into individual sheets is announced by Alacra. The Bowa 308 is a mid-range model, replacing the Bowa 303 which has sold 4,000 units since its introduction in 1974. The 308 will operate at throughputs of between 10% and 34% more than the 303 depending of form size and application, says Alacra.

The new Bowa 308 will be sold exclusively in the UK by Alacra. The Bowa 308 can handle form depths from 1/6th of an inch to 16 1/2 inches in 1/6th inch increments, the depth being selectable by the user. The width of the continuous web can be up to 510mm. Accessories available on the Bowa

308 include margin trimmers to remove the sprocket holes; a centre cutter for slitting the computer stationery into two and either a dropping or conveyor stacker to accept the output.

A major feature of the Bowa 308 is its ability to use OMR (optical mark recognition) techniques. The computer can print standard characters on the stationery. These can be optically scanned by the Bowa 308 and interpreted by microprocessor to control batching.

Price of the Bowa 308 guillotine is £4,995. Alacra (CW), Iveagh Avenue, North Circular Road, London NW10 7UJ. Tel: 01-965 9311.



The WY100 terminal.

Ergonomic terminal

DESIGN of visual display terminals has been the subject of much controversy recently, particularly among the medical profession, so the announcement of the new Comart VDU, offering a full range of ergonomic features, is an important event, claims the company.

The WY100, developed by Wyse Technology is a powerful, full feature, low cost terminal. Some of the more important ergonomic features include a fully rotating and tilting display, which is adaptable to individual requirements and a 12 inch green phosphor screen, to reduce eye strain.

Comart Limited (CW), Little End Road, Eaton Socon, St Neots, Cambs. PE19 3JG. Tel: (0480) 215005.

Lamp kills bugs in a/c

A BACTERICIDAL lamp introduced by Hanovia is designed to eliminate any possibility of bacteria and viruses being transmitted through air conditioning systems or harbouring in ventilation ducting in offices or factory buildings.

There is growing concern that the spread of common infections, such as flu, may be connected with the increasing use of air conditioning.

To combat this problem, Hanovia's bactericidal lamp is specifically designed for installation in air conditioning ductwork and retrofitting to existing ducts is simple according to the company.

The unit consists of a tubular, 560mm long ultraviolet lamp and an electrical control box which is fitted outside of the duct. Cool running, the lamp is mounted on a pre-drilled backplate/reflector via spring connectors. The high tension transformer control unit operates on a standard 240V input and supplies the lamp through 1m cables.

Ultraviolet light is emitted by the lamp at a specific wavelength of 254nm. This spectrum of UV radiation will positively kill or inactivate all types of micro-organisms including bacteria, viruses and moulds, says Hanovia. Whether one or several lamps are required for effective air sterilisation will depend on the duct dimensions and air flow rate.

Ramtek raster display costs 35% less

A DISPLAY system that uses a 16-bit microprocessor to offer high-resolution, high performance colour graphics and imaging capability in a compact, low-cost package has been introduced by Ramtek.

The RM-9460 display system offers all the features of Ramtek's RM9400 family but is priced starting at 35% less, says the corporation.

Ramtek's first 16-bit-based system, it utilises the MC68000 CPU and 64K RAM technology to achieve greater performance in a smaller, less expensive package.

Use of multiple memory processors allows the RM-9460 to perform independent graphics operations, such as local pan and zoom, on multiple workstations. Other features include context switching, image enhancement, entity detection, graphics functions, display list processing, de-cluttering, co-ordinate transformation and split screen/clipping. Interactive device options in-

clude general purpose keyboards with up to 40 function keys, joysticks, trackballs, light pens, digitising tablets and digital mice.

The RM-9460 offers resolution of 1280 x 1024 picture elements (pixels) and up to 32 refresh memory planes. Vector writing speeds are in excess of 16K vectors per second, based on an average vector length of 50 pixels. The system can display up to 1.3 million colours simultaneously from a palette of 16 million.

Like other members of the RM-9400 family, the RM-9460 allows for a broad range of graphics and imaging applications. Ideally suited for such applications as CAD/CAM, VLSI design, command and control, image processing, process control and mapping, the RM-9460 also can be used for multi-spectral imaging applications such as remote sensing and many types of sophisticated research programs.

Current users of Ramtek's Z80-based RM-9400 display generator

can easily upgrade their systems to 9460-level capability by adding an MC8000 CPU card developed by Ramtek.

The card is priced at £5,220. In addition, a Z80-based version of the RM-9400 is being offered for RM-9400 users to protect their investment in customised software that runs on the eight-bit microprocessor.

The RM-9460 starts at an end user price in the 18-20 thousand range, for a 1280 x 1024 x 8 plane system, with significant discounts for volume purchasers and OEMs. The 9460 is deliverable 60 days after receipt of order.

Ramtek is a pioneer in the design, development and manufacture of colour graphic computer displays for graphics and imaging. The company also offers industrial monitors and colour hard copy devices.

Ramtek UK (CW), Times House, Station Approach, Rushlip, Middlesex HA4 8LE. Tel: (08956) 76211/2.

Fireberd takes off

CODEX (UK) has announced the launch of another new instrument in the Fireberd series of digital error analysers used for checking out data communications networks.

The microprocessor-controlled Fireberd 2000 features the most flexible data interface system on the market, says Codex. It has 13 popular interface module options allowing the instrument to operate from low speeds (100 bps) to the much higher 10Mbps. Versatility such as this allows a single Fireberd 2000 test set to be used for all data circuit testing applications. Importantly for the UK market, the ASCII interface for the RS-232 output printer is incorporated within the unit, allowing Codex to offer the RS-232 interface and printer controls as standard.

Applications include error analysis to check communications link quality; long-term testing with printout for isolating difficult communications circuit problems; and identifying terminal equipment problems as against communications equipment problems. Codex (UK), (CW), 114/116 Thornton Road, Thornton Heath, Surrey CR4 6XB. Tel: 01-689 2101.

Finance is our Business

Lombard believe in people doing what they do best.

We realise that controlling increasingly tighter budgets is becoming an ever more demanding and exacting science.

Accurate forecasting together with the need to release valuable capital requires the right choice of funding options.

Finance and leasing are what we are best at.

If you'd like to know more about the possibilities of leasing equipment, plant, vehicles, or about the options available, call in at your local Lombard Branch Office or ring 01-409 3434, and ask for the Leasing Manager.

Lombard
North Central
PLC

Head Office: Lombard House, Curzon Street, London W1A 1EU

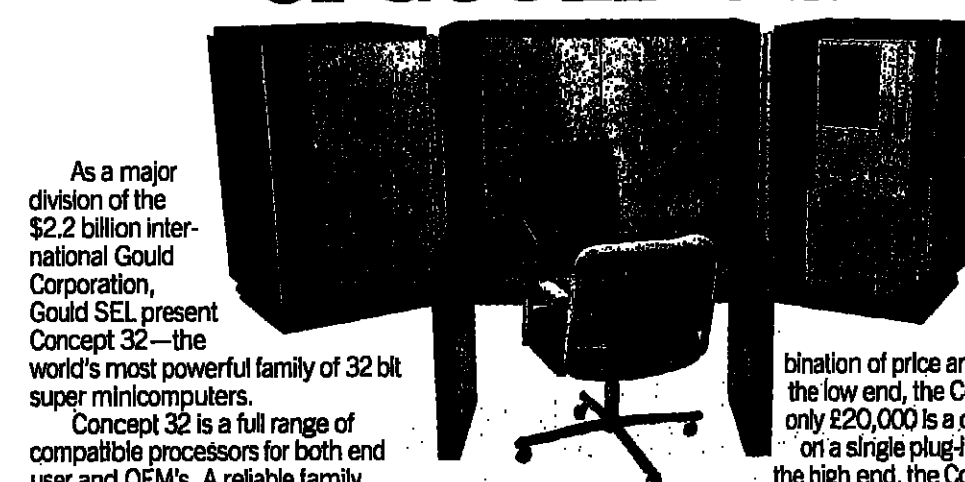
Choose Hamilton...

because Hamilton offer you the choice of...

Manufacturer	Rental or purchase	Maintenance programme	Ring now for further information
IBM	Full facilities are available from 1 to 24 months.	You can benefit from Hamilton's full range of maintenance services. We have engineers placed throughout the UK to respond fast to any service call.	London 01-961 8777 Birmingham 01-256 3001 Manchester 01-648 6330 Cardiff 01-222 4111 Aberdeen 0224-77000

The TOTAL Answer HAMILTON

When you're buying a minicomputer, invest with confidence in the experience of GOULD S.E.L.



As a major division of the \$2.2 billion international Gould Corporation, Gould S.E.L. present Concept 32—the world's most powerful family of 32 bit super minicomputers.

Concept 32 is a full range of compatible processors for both end user and OEM's. A reliable family capable of handling any systems application. Scientific data processing. Computational processing. Programme development. Simulation. Industrial Automation. Large process control and monitoring. Right through to data management.

To date, we have successfully installed more than 200 Concept 32 systems for customers throughout the UK. Major commercial and industrial organisations such as British Aerospace, the British National Oil

Corporation, Dunlop and Rolls-Royce to name but a few. The Concept 32 family provides an unbeatable combination of price and performance. At the low end, the Concept 32/27 from only £20,000 is a compact processor on a single plug-in module, whilst at the high end, the Concept 32/87 is the world's fastest 32 bit super minicomputer — for under £100,000 it's over 3 times faster than any other minicomputer system.

This broad range of power makes the Concept 32 family the perfect choice for your systems application. So if you're thinking of buying a minicomputer, follow the lead of some of the biggest names in British Industry. And invest with confidence in the experience of Gould S.E.L.

Invest with confidence in the experience of Gould S.E.L.

I'd like more information on the Concept 32 family ☐ I'd like to see Concept 32 in action. Please arrange a demonstration. Gould S.E.L. Computer Systems Limited, Raftery House, 2-4 Sutton Court Road, Sutton, Surrey SM1 4BY. Tel: 01-643 8020

Name _____
Position _____
Company _____
Address _____

Tel. No. _____

GOULD
Electronics & Electrical Products

MARKET PLACE

Computers certainly take a load off your mind, until they fail!

A fast and reliable parts and maintenance service for your DEC™ based computer system is just as much a necessity as the computer itself.

SK Computer Systems (Maintenance) Ltd provide:

* On-call fully trained Engineers. * Per-Call Service at competitive rates
* A Contract Maintenance Service. * In-house repair facilities.
* 4 hour or next working day response. Specialist Computer Removal Service

SK Computer Systems (Maintenance) Ltd hold a comprehensive stock of spares and can service and repair a wide range of DEC™ and compatible equipment.

SK Computer Systems (Maintenance) Ltd. On-line to meet your Computer's failure!

* DEC is a trademark of Digital Equipment Co. Limited.

SK
Computer Systems (Maintenance) Limited
Tel: Letchworth (04626) 79331
Telex: 825647 SKSYS G

SK Computer Systems (Maintenance) Limited
Unit F
Paxmore Ind. Est.
Paxmore Avenue
Letchworth
Herts SG6 1JJ

DEC PDP11.

DEC ADD-ONS, ADD-INS AND PERIPHERALS AVAILABLE FOR THE COMPLETE DEC™ RANGE FROM PDP11/04 TO VAX 11/780 AND EARLIER GENERATION MACHINES.

BOTH NEW AND SECONDUSER EQUIPMENT AVAILABLE FOR SPEEDY DELIVERY.

ALSO EX-STOCK DELIVERY ON ITEMS FROM THE COMPLETE FUNGUS RANGE OF DEC PDP11 COMPATIBLE PRODUCTS.

CONTACT:

fungus

COMPUTER PRODUCTS LIMITED
No. 1 Waterhead House, 2nd Floor, Teall Street, Wakefield, West Yorkshire, England. Tel: (0824) 380274/5/6. Telex: 857844

DEC & PDP11 are registered TRADE MARKS OF DIGITAL EQUIPMENT CORP

DEC & PDP11 are registered TRADE MARKS OF DIGITAL EQUIPMENT CORP

COMPUTER OPEN DAY

The relaxing way to see computers IS COMING TO LIVERPOOL

Thursday, September 23, 1982
St. George's Hotel, Lime Street, Liverpool L1 1NQ

Free admission plus a chance to win your own personal computer

Systems and Peripherals for OEMs Hardware, Software and Services for users - first computer for home and work

Exhibition opens 10am-5pm

For a complete programme, 10-15-82, see page 10

Name Address Tel

CIT 101
The VDU for DEC users.



SR4

System Limited, Letchworth, 447 High Road, North Finchley, London N12 0AZ, England. Tel: 01-349 2911, Telex: 825647 SKSYS G

Perfectly matched to your needs

SYSTEM
SYSTEMS ARCHITECTS

Standard Features

• VT100™ Compatible + A.V.O.
• Printer Port Independent BIA or 20MA I/F + 15ft Cable.
• Green or Grey Screen.
• Options
• Teletype 4016™ Compatible.
• Slave 160 cps Printer.

IBM Maintenance for less money with the Premier Computer Maintenance Plan.

You can't lose!

further details from:

PREMIER COMPUTER MAINTENANCE
3 Union Court, Richmond, Surrey TW9 1AA
Tel: 01-940 1134 Telex 926734

IBM PERSONAL COMPUTERS EX-STOCK

MICROLAND
Phone for demonstration in YOUR office
0428 53918
0428 3736

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH

SAMPLE UNITS AVAILABLE FOR SALE

IBM 5242/2741 all regular features complete with M402
Telex Instruments 880 DS10 Models 4, 6, etc. current T.I. maintenance
Data Processor 2260 600 lpm Printer/8 800 Printer, 132cp, 86-ch, set, standard config.
IBM 5221/23 Card Punches - Univac 1701/1710 Card Punches
BCL Processors - all peripherals - Computer Room Modular Flooring
IBM 5348 Data Modules - Newbury Lane, VDU 7004/6, 7008/9
System 5200, 3000, 1000s etc. - most manufacturers' systems available on request

NEW DE LUXE 80 COLUMN HAND PUNCHES EX-STOCK

01-484 8011
TELEX 896588
WEBSTER P SERVICES LTD
85 WINDHURST ROAD, BROMLEY
KENT BR1 3AA

UNBELIEVABLE PRICES FOR CABLE AND ACCESSORIES

FOR ONE MONTH ONLY OR WHILST STOCKS LAST THE FOLLOWING ITEMS ARE BEING OFFERED AT LOW LOW PRICES -

CABLE
2 Individually screened pair cable Belden 8723 or Alpha 2486 £86 per 1000ft.
3 Individually screened pair cable Belden 8777 or Alpha 6010 £170 per 1000ft.

CONNECTORS
RS232 Connector kits - 25 way D type plug or socket, Amp shroud and male screw locks £2.50 each
10ft. long 25 each 25 each

RS232 CABLES
4-core 5-core 25 each 25 each

All prices including delivery but exclusive of VAT

DATECH LTD.
REGENCY HOUSE, LOWER REGENCY ST.
BIRMINGHAM, NOTTINGHAM
Telephone: 092 256019

IBM 129 BUFFERED PUNCH/VERIFIERS 029 PRINTING PUNCHES

Competitive Rental/Sales TEL: 0268 710292
C.D.L. LTD., DOWNHAM ROAD, RAMSDEN HEATH, ESSEX

PRODUCT UPDATE

GET MORE PAY LESS.

TRY THE ALTERNATIVE

Now VAS can offer you The Alternative Head featuring 3330 high reliability slider technology. This "head of the future" is designed to be electrically and mechanically compatible for C.D.C. drives. Since its introduction over 30,000 have been sold. So try The Alternative Head. You'll get more and pay less.

VAS long ago established itself as the foremost independent supplier of Magnetic Heads, Air Filters and Magnetic Media. You can now obtain on very quick delivery 80mb and 300mb Storage Module Drives, 32, 64 and 96mb Cartridge Module Drives and the C.D.C. 8334 Matrix Printer. For prices and quick delivery phone:

VAS Computer Parts & Accessories Limited
44 Masons Hill, Bromley, Kent
01-464 7227 Telex: 896559

WANTED IBM/ICL REDUNDANT/OBSOLETE COMPUTERS

Raybold Computer Services, Unit 12 West Station Industrial Estate 8000 Road, Maidstone, Essex Tel: Maidstone (0621) 84668

DISK DRIVES
Diablo Model D44B, 5 + 5Mb, new, complete with PSU. Suitable for DEC and D.G.
Contact: J. Hipserson 0785 21744

Due to cancelled project, we have available 18 new Delta Data 7303 VDUs for immediate purchase at substantial discount.

First come, first served

Phone Steve Brown 01-248 6499

BUYING SELLING LEASING?

COMPUTER RESALE BROKERS
CRB House, 33 Church Street, Basingstoke Hampshire RG21 1QG Telephone (0256) 55431 Telex 898049

DATA CABLES
All types of standard and custom cables supplied by direct from the manufacturer.
For an immediate supply contact Kim Buckingham, 100 Winton St, 01-774 1111

IBM Maintenance for less money with the Premier Computer Maintenance Plan.

You can't lose!

further details from:

PREMIER COMPUTER MAINTENANCE
3 Union Court, Richmond, Surrey TW9 1AA
Tel: 01-940 1134 Telex 926734

IBM PERSONAL COMPUTERS EX-STOCK

MICROLAND
Phone for demonstration in YOUR office
0428 53918
0428 3736

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH

SAMPLE UNITS AVAILABLE FOR SALE

IBM 5242/2741 all regular features complete with M402
Telex Instruments 880 DS10 Models 4, 6, etc. current T.I. maintenance
Data Processor 2260 600 lpm Printer/8 800 Printer, 132cp, 86-ch, set, standard config.
IBM 5221/23 Card Punches - Univac 1701/1710 Card Punches
BCL Processors - all peripherals - Computer Room Modular Flooring
IBM 5348 Data Modules - Newbury Lane, VDU 7004/6, 7008/9
System 5200, 3000, 1000s etc. - most manufacturers' systems available on request

NEW DE LUXE 80 COLUMN HAND PUNCHES EX-STOCK

01-484 8011
TELEX 896588
WEBSTER P SERVICES LTD
85 WINDHURST ROAD, BROMLEY
KENT BR1 3AA

UNBELIEVABLE PRICES FOR CABLE AND ACCESSORIES

FOR ONE MONTH ONLY OR WHILST STOCKS LAST THE FOLLOWING ITEMS ARE BEING OFFERED AT LOW LOW PRICES -

CABLE
2 Individually screened pair cable Belden 8723 or Alpha 2486 £86 per 1000ft.
3 Individually screened pair cable Belden 8777 or Alpha 6010 £170 per 1000ft.

CONNECTORS
RS232 Connector kits - 25 way D type plug or socket, Amp shroud and male screw locks £2.50 each
10ft. long 25 each 25 each

RS232 CABLES
4-core 5-core 25 each 25 each

THE ALTERNATIVE

Now VAS can offer you The Alternative Head featuring 3330 high reliability slider technology. This "head of the future" is designed to be electrically and mechanically compatible for C.D.C. drives. Since its introduction over 30,000 have been sold. So try The Alternative Head. You'll get more and pay less.

VAS long ago established itself as the foremost independent supplier of Magnetic Heads, Air Filters and Magnetic Media. You can now obtain on very quick delivery 80mb and 300mb Storage Module Drives, 32, 64 and 96mb Cartridge Module Drives and the C.D.C. 8334 Matrix Printer. For prices and quick delivery phone:

VAS Computer Parts & Accessories Limited
44 Masons Hill, Bromley, Kent
01-464 7227 Telex: 896559

WANTED IBM/ICL REDUNDANT/OBSOLETE COMPUTERS

Raybold Computer Services, Unit 12 West Station Industrial Estate 8000 Road, Maidstone, Essex Tel: Maidstone (0621) 84668

DISK DRIVES
Diablo Model D44B, 5 + 5Mb, new, complete with PSU. Suitable for DEC and D.G.
Contact: J. Hipserson 0785 21744

Due to cancelled project, we have available 18 new Delta Data 7303 VDUs for immediate purchase at substantial discount.

First come, first served

Phone Steve Brown 01-248 6499

BUYING SELLING LEASING?

COMPUTER RESALE BROKERS
CRB House, 33 Church Street, Basingstoke Hampshire RG21 1QG Telephone (0256) 55431 Telex 898049

DATA CABLES
All types of standard and custom cables supplied by direct from the manufacturer.
For an immediate supply contact Kim Buckingham, 100 Winton St, 01-774 1111

IBM Maintenance for less money with the Premier Computer Maintenance Plan.

You can't lose!

further details from:

PREMIER COMPUTER MAINTENANCE
3 Union Court, Richmond, Surrey TW9 1AA
Tel: 01-940 1134 Telex 926734

IBM PERSONAL COMPUTERS EX-STOCK

MICROLAND
Phone for demonstration in YOUR office
0428 53918
0428 3736

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH

SAMPLE UNITS AVAILABLE FOR SALE

IBM 5242/2741 all regular features complete with M402
Telex Instruments 880 DS10 Models 4, 6, etc. current T.I. maintenance
Data Processor 2260 600 lpm Printer/8 800 Printer, 132cp, 86-ch, set, standard config.
IBM 5221/23 Card Punches - Univac 1701/1710 Card Punches
BCL Processors - all peripherals - Computer Room Modular Flooring
IBM 5348 Data Modules - Newbury Lane, VDU 7004/6, 7008/9
System 5200, 3000, 1000s etc. - most manufacturers' systems available on request

NEW DE LUXE 80 COLUMN HAND PUNCHES EX-STOCK

01-484 8011
TELEX 896588
WEBSTER P SERVICES LTD
85 WINDHURST ROAD, BROMLEY
KENT BR1 3AA

UNBELIEVABLE PRICES FOR CABLE AND ACCESSORIES

FOR ONE MONTH ONLY OR WHILST STOCKS LAST THE FOLLOWING ITEMS ARE BEING OFFERED AT LOW LOW PRICES -

CABLE
2 Individually screened pair cable Belden 8723 or Alpha 2486 £86 per 1000ft.
3 Individually screened pair cable Belden 8777 or Alpha 6010 £170 per 1000ft.

CONNECTORS
RS232 Connector kits - 25 way D type plug or socket, Amp shroud and male screw locks £2.50 each
10ft. long 25 each 25 each

RS232 CABLES
4-core 5-core 25 each 25 each

All prices including delivery but exclusive of VAT

DATECH LTD.
REGENCY HOUSE, LOWER REGENCY ST.
BIRMINGHAM, NOTTINGHAM
Telephone: 092 256019

IBM PERSONAL COMPUTERS EX-STOCK

MICROLAND
Phone for demonstration in YOUR office
0428 53918
0428 3736

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH

SAMPLE UNITS AVAILABLE FOR SALE

IBM 5242/2741 all regular features complete with M402
Telex Instruments 880 DS10 Models 4, 6, etc. current T.I. maintenance
Data Processor 2260 600 lpm Printer/8 800 Printer, 132cp, 86-ch, set, standard config.
IBM 5221/23 Card Punches - Univac 1701/1710 Card Punches
BCL Processors - all peripherals - Computer Room Modular Flooring
IBM 5348 Data Modules - Newbury Lane, VDU 7004/6, 7008/9
System 5200, 3000, 1000s etc. - most manufacturers' systems available on request

NEW DE LUXE 80 COLUMN HAND PUNCHES EX-STOCK

01-484 8011
TELEX 896588
WEBSTER P SERVICES LTD
85 WINDHURST ROAD, BROMLEY
KENT BR1 3AA

UNBELIEVABLE PRICES FOR CABLE AND ACCESSORIES

FOR ONE MONTH ONLY OR WHILST STOCKS LAST THE FOLLOWING ITEMS ARE BEING OFFERED AT LOW LOW PRICES -

CABLE
2 Individually screened pair cable Belden 8723 or Alpha 2486 £86 per 1000ft.
3 Individually screened pair cable Belden 8777 or Alpha 6010 £170 per 1000ft.

CONNECTORS
RS232 Connector kits - 25 way D type plug or socket, Amp shroud and male screw locks £2.50 each
10ft. long 25 each 25 each

RS232 CABLES
4-core 5-core 25 each 25 each

All prices including delivery but exclusive of VAT

DATECH LTD.
REGENCY HOUSE, LOWER REGENCY ST.
BIRMINGHAM, NOTTINGHAM
Telephone: 092 256019

IBM 129 BUFFERED PUNCH/VERIFIERS 029 PRINTING PUNCHES

Competitive Rental/Sales TEL: 0268 710292
C.D.L. LTD., DOWNHAM ROAD, RAMSDEN HEATH, ESSEX

TELEX-11 THE DEC PDP-11 AND VAX TO TELEX NETWORK INTERFACE

For details call Maidenhead (0628) 72037

TELEX-11

THE DEC PDP-11 AND VAX TO TELEX NETWORK INTERFACE

MONITOR PRINTER

COMPUTER OR WORD PROCESSOR

PRINTER

TELEX LINE

• Eliminate dialling and paper tape • Speed up your operations
• Messages can be held for off-peak transmission
• Re-transmission handled automatically
• Runs under RT11, RSX, RSTS and VMS
• Complete hardware and software package

Lambart Computing
42 Montagu Road, Maidenhead, Berks SL6 6PH
Telephone: Maidenhead (0628) 72037/9 Telex: 848655

DEC and DATA GENERAL

Buy, Sell or Trade Sample of stock

• 6088 VDU • 90MB Disk Drive • BA11-KF
• 256Kb Eclispse Memory • Nova 4X Memory • RK05-J
• LP2 Printer • DL11-W • RK11-D
Call: Alan Dods, 01-467 1985 or 01-467 8489

Thomas Business Systems, Ltd.

We buy and sell new/used DEC
2500,000 stock of Systems, Peripherals, LSH-11, PDP-11 and VAX-11
New 11/23 plus systems

Dectrade Ltd
Network House, 20 Ludlow Hill Road, West Bridgford, Nottingham
Tel: 0802-232285 Telex: 377878 NETWORK

IBM PERSONAL COMPUTERS EX-STOCK

MICROLAND
Phone for demonstration in YOUR office
0428 53918
0428 3736

NEW/USED COMPUTER EQUIPMENT BUY OR SELL THROUGH

SAMPLE UNITS AVAILABLE FOR SALE

IBM 5242/2741 all regular features complete with M402
Telex Instruments 880 DS10 Models 4, 6, etc. current T.I. maintenance
Data Processor 2260 600 lpm Printer/8 800 Printer, 132cp, 86-ch, set, standard config.
IBM 5221/23 Card Punches - Univac 1701/1710 Card Punches
BCL Processors - all peripherals - Computer Room Modular Flooring
IBM 5348 Data Modules - Newbury Lane, VDU 7004/6, 7008/9
System 5200, 3000, 1000s etc. - most manufacturers' systems available on request

NEW DE LUXE 80 COLUMN HAND PUNCHES EX-STOCK

01-484 8011
TELEX 896588
WEBSTER P SERVICES LTD
85 WINDHURST ROAD, BROMLEY
KENT BR1 3AA

UNBELIEVABLE PRICES FOR CABLE AND ACCESSORIES

FOR ONE MONTH ONLY OR WHILST STOCKS LAST THE FOLLOWING ITEMS ARE BEING OFFERED AT LOW LOW PRICES -

CABLE
2 Individually screened pair cable Belden 8723 or Alpha 2486 £86 per 1000ft.
3 Individually screened pair cable Belden 8777 or Alpha 6010 £170 per 1000ft.

CONNECTORS
RS232 Connector kits - 25 way D type plug or socket, Amp shroud and male screw locks £2.50 each
10ft. long 25 each 25 each

RS232 CABLES
4-core 5-core 25 each 25 each

All prices including delivery but exclusive of VAT

DATECH LTD.
REGENCY HOUSE, LOWER REGENCY ST.
BIRMINGHAM, NOTTINGHAM
Telephone: 092 256019

IBM 129 BUFFERED PUNCH/VERIFIERS 029 PRINTING PUNCHES

Competitive Rental/Sales TEL: 0268 710292
C.D.L. LTD., DOWNHAM ROAD, RAMSDEN HEATH, ESSEX

TELEX-11 THE DEC PDP-11 AND VAX TO TELEX NETWORK INTERFACE

For details call Maidenhead (0628) 72037

TELEX-11

THE DEC PDP-11 AND VAX TO TELEX NETWORK INTERFACE

MONITOR PRINTER

COMPUTER OR WORD PROCESSOR

PRINTER

TELEX LINE

• Eliminate dialling and paper tape • Speed up your operations
• Messages can be held for off-peak transmission
• Re-transmission handled automatically
• Runs under RT11, RSX, RSTS and VMS
• Complete hardware and software package

Lambart Computing
42 Montagu Road, Maidenhead, Berks SL6 6PH
Telephone: Maidenhead (0628) 72037/9 Telex: 848655

DEC and DATA GENERAL

Buy, Sell or Trade Sample of stock

• 6088 VDU • 90MB Disk Drive • BA11-KF
• 256Kb Eclispse Memory • Nova 4X Memory • RK05-J
• LP2 Printer • DL11-W • RK11-D
Call: Alan Dods, 01-467 1985 or 01-467 84

BOOKS

Have fun with your computer...

MicroPhobia. Martin Honeysett. £2.50 (paperback), £4.95 (hardback). Century Publishing Co.

THIS is a superb book of witty, topical and penetrating cartoons by the well-known media cartoon-

ist Martin Honeysett, whose work has appeared in Punch and Private Eye.

As in his newspaper cartoons, he has great sympathetic insight into human foibles and weaknesses, but is also merciless in exploiting

them in the name of humour. The result is a hilarious collection of situations which are only a fraction removed from actual scenes encountered every day, and many are a logical conclusion to the direction in which technology will move if not kept under control.

The undertakers cartoon (illustrated) might seem far-fetched, but somewhere in the country there is probably an undertaker busy installing a home computer to run his accounts system, and stock control usually follows in the footsteps of ledger systems.

"How to survive your computer", the sub-title of this book, is rather tongue-in-cheek, because Honeysett has endowed his computers with endearing human characteristics. An emaciated personal computer sitting in the kitchen is said to be the result of a housewife's diet programs, and an exhausted television set has been

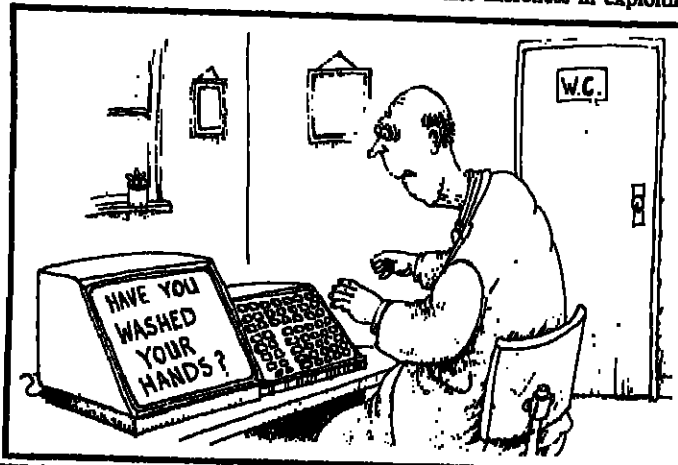
playing squash with its owner.

The book covers all aspects of the technological revolution, including video, telephone answering systems and viewdata, and

relates them to issues of the decade. Unemployment, space invaders in pubs, divorce, strikes and technology in schools all come out for an airing.

An excellent book, and one which, when picked up, is possible to put down.

Maggie McLean

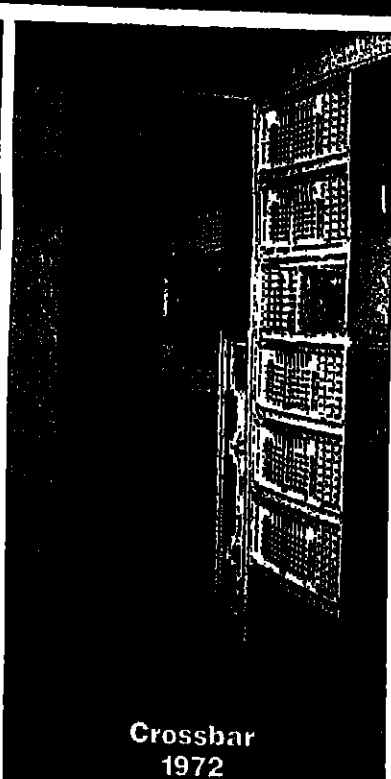


"I'm terribly sorry, Mrs Nisbitt, we've had no end of trouble since we installed a computer in the office."

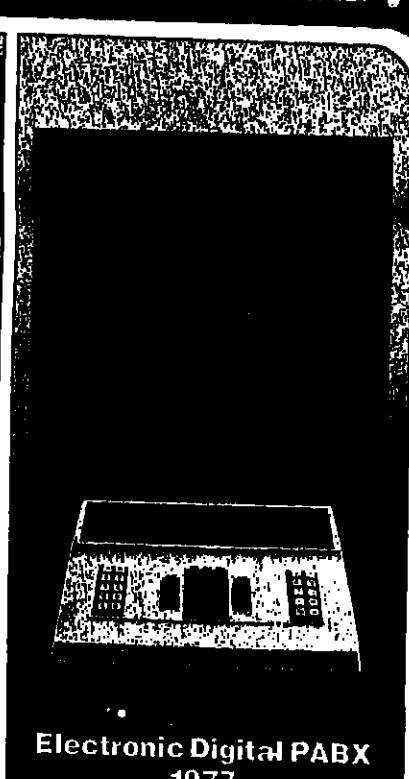
Telephone Rentals is...



Strower 1957



Crossbar 1972



Electronic Digital PABX 1977

Britain's largest company dedicated solely to business communications

...the PABX experience!

Yes... Telephone Rentals is.

For the last 25 years we've been designing, supplying and installing 100 plus-line PABX systems as BT Approved Suppliers.

Designing and installing them for organisations like the BBC, the Stock Exchange, Hospitals, Local Authorities, Police Authorities. And for many, many famous commercial organisations all over Britain.

First Strower systems, then Crossbar and now, for 5 years our digital spc PABX.

Telephone Rentals.

Always at the forefront of technology.

And now extending the digital PABX to provide data and text as well as voice channels.

Preparing for the electronic office of the future.

Commercially. Helpfully. All over Britain

Talk to Telephone Rentals
about Electronic Digital PABX

We have a
colour brochure
about the
TR electronic PABX.
Please ask for a copy.



Some old favourites re-issued

Writings of the Revolution. Selected Readings on Software Engineering. Edited by E. Yourdon. 460pp. Yourdon 1982.

THIS is a companion volume to Yourdon's earlier collection, *Classic in Software Engineering* (Yourdon 1979). It consists of 25 republished papers, selected by Yourdon and divided into seven sections, each with a short summary introduction.

Any collection of this type mainly reflects the background and preferences of its editor. Your reviewer found a number of old favourites here, some new material and a few surprising omissions; a number of less familiar contributors rub shoulders with such authors as Belady, Dijkstra, Hoare, Knuth, Lehman, Parnas and Wirth.

As one would expect from such a list, there is some fine material here to justify the somewhat extravagant title. However, the collection is highly selective, and necessarily so when it deals with a wide range of topics, from analysis and design techniques, through proofs of program correctness, to project management, metrics and human conceptual limits.

As a representative introduction to the technical literature over such a wide field the volume has much to commend it. It is well produced and pleasant to use, but unfortunately lacks both an integrated list of references and a general index.

Peter Wallis
University of Bath

A valuable aid to software production

Software Configuration Management. J. K. Buckle. It. Macmillan 1982. 111 (hardback), £5.95 (paperback).

ALTHOUGH there are a number of books on software engineering, software life-cycle and software development methodologies, are few handbooks on the extensive detail of organising software projects. This is the book that Buckle has chosen to write. It will be valuable to those involved in software production whether as single programmers or in running large teams.

The author draws both on his own experiences as a consultant and on the experiences of his managing major software projects elsewhere. The methods suggested are applicable in almost any environment, being largely independent of programming language, development methodology or project size. After introducing the basic concepts, the book details document production, inspection, control, reviews, inspection, testing, validation and maintenance. Applicable software systems are discussed, as are the organisation required for the application of the suggested methodology. The author's book is a rather tedious reading. However, many valuable ideas are presented and anyone involved in software production who reads the book is sure to find new ways of improving its effectiveness as a result.

Distributed DP trends

Distributed Database Management Systems. Olin H. Bray. Lexington Books. ISBN: 0-669-03396-0, 163pp.

THIS book by Olin Bray is intended to provide an introduction to distributed database management systems (DDBMS) and to point out some of the current areas of development and research. The text is oriented towards DP practitioners and students — particularly those having some background knowledge of databases. The work is divided into 10 chapters. Following a brief introduction, Chapter 2 discusses the

aims and objectives of the technology and the current software approaches to the solution — the Codasyl and the relational methodologies. There are a few chapters on communications and processing. The chapter on communications is particularly relevant since it presents a discussion of the recent ISO Open Systems Interconnection model. Those who use this book will find it well organised and easy to read. They will also find the bibliography of interest.

NEC PC-8000 Personal Computer.



NEC turns 28 years of computer experience to your personal advantage.

It takes a great computer company to make a great personal computer. And from the start, NEC has been a pioneer in computer technology. In fact, we invented the all-semiconductor computer in 1959. Now, hundreds of innovations later, we've made it personal.

We present the PC-8000, a powerful and friendly business tool that can help you get more done in a day than you ever could before. It combines some of the most reliable hardware on the market with application packages designed to make the most of its unique features. In addition, the PC-8000 accepts popular CP/M® business software, making its possibilities virtually limitless.

The entire PC-8000 system is now available through better computer dealers across the country. And that means more than hardware. It means effective software, the finest documentation and extensive training to help you get the most from your personal computer. So why not turn our system to your personal advantage now.

NEC
Nippon Electric Co. Ltd.

(CP/M is a registered trademark of Digital Research Inc.)

Write for more information about the
NEC PC-8000.

NAME _____

COMPANY _____

ADDRESS _____

Attach this coupon to your letterhead and mail it to NEC Telecommunications Europe Co. Limited, NEC House, 164/168 Drummond Street, London N.W.1 3HP, U.K.

TR Telephone Rentals plc
P.O. Box 100, 173 Farnley Road, Farnley, Millwall, London, E11 1JH
Tel: 01-252 2200 Telex: 851 077
Fax: 01-252 2200

TR Offices at: 173 Farnley Road, Farnley, Millwall, London, E11 1JH
Tel: 01-252 2200 Telex: 851 077
Fax: 01-252 2200

Office 150

Sonar Signal Processing Looking for your hidden depths?

It's not simply a question of being involved in finding solutions to some of today's most sophisticated technical problems. Only in a field as demanding as defence electronics can you hope to draw on the sort of resources our client can deploy. Or to spend as much time thoroughly exploring all the R&D aspects of your task. This is an environment that takes a special type of dedication and commitment, but both material rewards and technical recognition set these apart as particularly challenging opportunities.

Due to expansion our client has opportunities for Analysts/Software Designers to join a small team, forming part of an overall software group of around 50. These are no 'ivory tower' positions - you will have direct contact with clients and outside organisations to ensure timely and effective results.

ANALYST/SOFTWARE ENGINEER

You will be responsible for the detailed design of Sonar Signal Processing Equipment, mainly software aspects but also including firmware and hardware. There will be a major co-ordination role - meeting clients and harmonising the efforts of other analysts, software and hardware designers to satisfy the customers' requirements. You will evaluate alternative solutions, assisting programmers in detailed design and testing and document the implementation.

You will probably be a graduate with a degree in Physics, Maths or Computer Science, hopefully with a higher qualification (M.Sc. or Ph.D.) and at least 3 years' work experience including some of the following: - programming in a high level language, micro processors, statistical analysis, systems design. If you can communicate well, demonstrate initiative and feel you have the potential to lead a team, then we will see you achieving project responsibility in the system design team within 1-2 years.

MATHEMATICIAN/DESIGNER

Again this will involve client contact - liaising on the design, evaluation and selection of signal processing algorithms. You will evaluate alternative algorithms, prove the mathematics of the recommended solution and liaise closely with the project leader of the software group on its incorporation into the finalised software product.

You will be a graduate, ideally with a Ph.D. in a mathematical aspect of a physical science ideally with computer programming experience (Coral 66 or Fortran) and some work experience in some of the following areas: - signal processing analysis, mathematical modelling, statistical analysis. Again you should enjoy dealing with people and communicating your ideas and enthusiasm to others. If you feel you have the potential then our client visualises that the person filling this role would become responsible for a team of analysts within 1-2 years.

Please submit a detailed CV or telephone (24 hour answering service) for further information and application form. Please quote ref. CW121-21.

CAPP ASSOCIATES
01-686 9693

Capp House, 96d South End,
Croydon CR9 3SD.
International & UK Recruitment
Consultants

Systems Support Services

At the hardware/software interface

Our client's impressive hardware configurations (based on GEC 4000 and TI 990) is matched by their thoroughgoing commitment to full specialist training for all their systems engineers. Working from the Northern Home Counties, they are ranked among the country's foremost electronics companies, with important contracts for both military and commercial applications of their leading-edge technology.

Hardware Support Engineer

Their principal requirement is for HNC or ONC-qualified men and women, 26+ with at least 3 years' computer service experience, probably gained with a manufacturer of either mini-computers or peripherals. Knowledge of TI 990 Series hardware would be an advantage.

Digital Engineers

With at least an HNC and experience in the maintenance of military hardware systems and related special-to-type equipment. An appreciation of computer concepts and an understanding of the hardware/software interface would be an advantage.

Systems Support Engineer

A true hardware/software interface role, this provides an opportunity to progress your Coral 66 programming experience into writing, proving and adapting special-to-type engineering software at machine code level. Previously your background should have been in Digital Engineering.

Computer Operations Controller

Probably in your early thirties, with a solid ops background working on DEC TOPS 10 and a carefully considered career move into systems software already behind you, this is an interesting opportunity for a capable communicator to assume supervisory responsibilities and to ensure that the company's software proving systems are used to their full capacity.

These are all senior appointments, attracting competitive salaries and a generous benefits package including relocation assistance. To find out more please write, in the first instance, to Mike Fenning, Lockyer, Bradshaw & Wilson Limited, 178 North Gower Street, London NW1 2NB. All replies will be treated confidentially. Please list any companies to whom you do not wish your application forwarded.

THE UNIVERSITY OF SUSSEX TEMPORARY SENIOR PROGRAMMER/ STATISTICAL ADVISER

Applications are invited for a temporary post of Senior Programmer/Statistical Adviser for one year, starting on October 1, 1982, or as soon as possible thereafter in the Research Support Unit of the Arts and Social Studies Area. The person appointed will advise on the acquisition and use of library facilities. A thorough knowledge of the use of statistics in the social sciences is required, with experience of programming and the use of statistical packages. The programming languages in use include Pascal, Fortran and Algol 68. The Unit uses the 3 local VAX 11/780 computers running under VMS, and regional machines at London and Manchester.

Salary will be in range 1A of the Other Related Faculty salary scales £8,375 to £11,100 per annum plus membership of the Universities Superannuation Scheme.

Further particulars and application form, returnable by September 21, 1982, available from the Personnel Office, Sussex House, University of Sussex, Brighton, BN1 9RT (Brighton 806725, Mrs. Stepany, quoting reference 48172).

MICROCOMPUTERS IN LABORATORIES

Applications of microcomputers and development of software and systems. Join the northwest London base of our international company already supplying the chemical laboratory marketplace, and make a major contribution to our build-up in this growth area. We offer an excellent career opportunity to a suitably motivated individual with relevant experience, on microcomputers. Please write in confidence to the Managing Director, Box 1218CW. (0843)

FOR
CLASSIFIED
ADVERTISING USE

DIRECT
LINE
01-661 0121

'COMPUTER SCIENCE GRADUATES'

Electronic Office Services a leading company in the information technology field, offers an exciting opportunity for Computer Science Graduates working with the sophisticated 'State of the Art Technology' in microcomputers.

The applicant should have an interest in the following areas:

DATABASE THEORY, COMPUTER GRAPHICS
STRUCTURED PROGRAMMING IN PASCAL AND C
Excellent career prospects, £7,000 p.a. +

Telephone: TONY McLAUREN ON 01-248 6871
ELECTRONIC OFFICE SERVICES LTD.
28-31 Fleet Lane, London, EC4

SOFTWARE CONFIGURATION MANAGEMENT CONSULTANT

2 years - applicants will have expert experience in the integration of computer management systems and procedures in large IBM SCL and SPS environments.

ANALYST/PROGRAMMERS

Salary neg. Minimum 2 years on IBM with CSOL

SOFTWARE ENGINEERS AND PROGRAMMERS

For various companies based in London/Heathrow. Competitive salaries from £20,000-£25,000.

SENIOR SOFTWARE ENGINEERS

£21,000. A dynamic company with a policy of career progression.

PROGRAMMERS AND ANALYSTS

£17,000 to £21,000. Broad experience based on a variety of computer languages and technical projects based on mainframe and microcomputers.

For an application form for these and other software engineering jobs, please send your CV to: Colin Arnold, Personnel Officer, EPC, 58a High Street, Esher, Surrey KT10 9QY. Tel: 04372 66968 or 04372 66969. No stamp required on CV. CVs to be sent by post.

Name _____

Address _____

Beechwood

TOP JOBS

Major Systems Sales

**£45K on target
£16K guarantee
3 territories in London
and Home Counties**

Vigorously expanding contender in the major systems market offering total solutions to large users, seeks top-flight sales professionals with presence, aggression and maturity.

Unique opportunity for you to join one of the highest paid teams in the industry.

Carefully designed incentive/remuneration package provides maximum tax-saving advantages.

Telephone David Lloyd or Brian Mawdsley quoting ref CW 1029.

**Lloyd Chapman
Associates**
123, New Bond Street, London W1Y 0HR 01-499 7761

U.K. GENERAL MANAGER COMPUTER GRAPHICS

Berkshire based c. £30,000 pa. + car + benefits

Our client company is the pride of its multinational parent group who are the world's largest manufacturer of electrostatic plotters, with regular growth of 30% p.a.

The UK Company has a current turnover of \$8.5 million and occupies purpose-built offices in attractive surroundings in 'Silicon Valley'. Extremely marketing orientated, success has been due to dynamic sales leadership and dedicated teamwork of 30 staff.

The new UK General Manager will report directly to group head office in the U.S.A. The position will appeal to hardworking ambitious managers aged 35-45 with appropriate sales and engineering backgrounds.

CANDIDATES MUST HAVE:-

- Direct relevant experience in the computer graphics industry.
- Ability to communicate in electronic engineering language to producers and users.
- A proven record of sales success and of negotiating substantial six figure value contracts at senior levels.
- Management experience with profit accountability.
- Leadership qualities to achieve further successful development in an expanding market for the company's existing and new products.

Applications for this important position will be treated in strict confidence and should be made by telephoning EPC's managing director in the UK, Mr. Nigel Schollick on 06286 4815, or by writing to the address below:

INTERNATIONAL SPECIALISTS IN COMPUTER APPOINTMENTS



European personnel counsellors

58a High Street, Esher, Surrey KT10 9QY
Telephone: (04372) 66968 or (04372) 66969

SYSTEMS ENGINEERS/ PROGRAMMERS

**SAUDI ARABIA
£14,000 - £22,000
offer tax**

Aramco is the largest oil-producer in the world and as such can offer unparalleled opportunities and challenges to qualified professionals.

Based in the Eastern Province on the Arabian Gulf, the Materials Supply Organisation seeks professionals with programming experience in Mark IV Language utilising features like advanced cable hook-up, extended file processing, array processing, data base (IMS) interface, and text processing.

Candidates with experience in computer programming languages other than Mark IV who are willing to undergo training in this area will also be considered. In either case, familiarity with IBM's OS/VS1 or VS2 Operating System and JCL, IBM utilities and TSO is a must.

Initially single status, married status accommodation may later be available. The Company provide first class working conditions and the range of leisure facilities available is excellent.

For further details please contact Colin Mawdsley on 01-499 7761 (24 hour answering phone) or 04372 66969. For a copy of the job offer, 1980-2000 hours, or write to him at c.mawdsley@epc.com, 123 New Bond Street, London, W1Y 0HR, quoting reference 002/16.



ARAMCO

DALROTH
computer personnel

partners in progress

If you can talk the same language as our customers then we'd like to talk to you

ACCOUNT MANAGERS O.E.M./DISTRIBUTORS

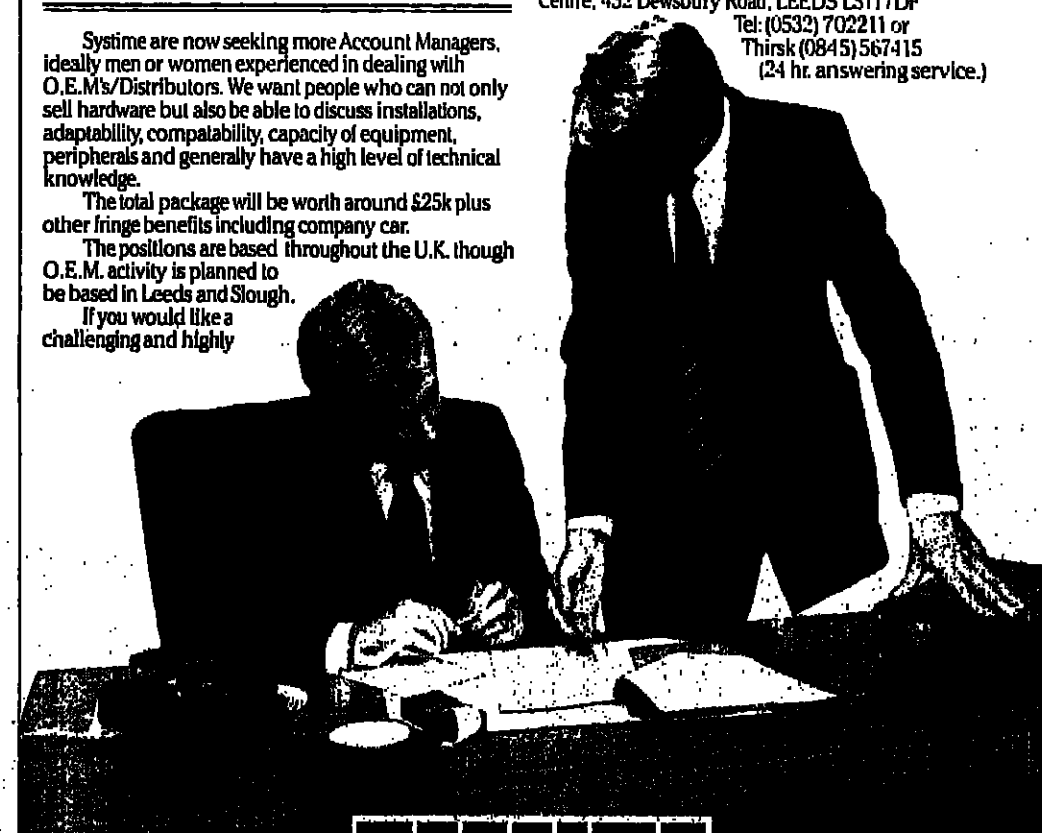
rewarding career with one of the most dynamic computer manufacturers around, write now for full details to: Steve Williams, Systime Limited, Concourse Computer Centre, 432 Dewsbury Road, LEEDS LS1 7DF. Tel: (0532) 702211 or Thirk (0845) 567415 (24 hr. answering service.)

Systime are now seeking more Account Managers, ideally men or women experienced in dealing with O.E.M./Distributors. We want people who can not only sell hardware but also be able to discuss installations, adaptability, compatibility, capacity of equipment, peripherals and generally have a high level of technical knowledge.

The total package will be worth around £25k plus other fringe benefits including company car.

The positions are based throughout the U.K. though O.E.M. activity is planned to be based in Leeds and Slough.

If you would like a challenging and highly



SYSTIME

LONDON 01-251 6233 • ABERDEEN 0224 6426 • BRISTOL 0273 2244 • GLASGOW 041 221 6132 • HALLOWEEN 0434 611 2088
LYNCHTON 0550 78022 • MANCHESTER 061 789 7322 • NORTHAMPTON 0504 21511 • NOTTINGHAM 0522 221261
SLOUGH 0753 20311 • SUNDERLAND 0783 49444 • BELFAST 0232 661911

Great contracts. No bull.

FREELANCE OPPORTUNITIES

SOUTHERN 0252 516141

ABS MULTIBUS Simple Programmers Analysts with Insurance or Assurance Expertise.
BURROUGHS 6800 COBOL Analyst/Programmers.
CIS COBOL Programmers, Many RQTS CORAL 66 All Levels.
DATA GENERAL COBOL with INFOS INFOS Programmers.
HARDWARE AND SOFTWARE Engineers.
HONEYWELL DPS8 DM IV COBOL Programmers.
HONEYWELL IDS/TDS COBOL Programmers.
HP 3000 COBOL Programmers.
HP 9845 BASIC Programmers.
IBM OS COBOL Programmers.
IBM COBOL with IMS DB/DC Analyst/Programmers.
IBM COBOL with CICS DL1.
IBM COPICS EXPERTISE, Many RQTS.
IBM PL1 Some with CICS
IBM MK IV
IBM SYS 34 RPG II and/or COBOL
IBM SYS 38 RPG III
ICL VMEB IDMS or TPMS, All levels many RQTS
ICL Analysts, with IDMS or TPMS
ICL 2900 VME Technical Support All Levels
ICL SYSTEM 10 or 26 Assembler Programmers.
ICL 1500 Assembler.
ICL Consultant with PERICLES.
ICL ME 29 Programmers.

ICL Consultant with Sizing and Base Support Expertise.
ICL 2900 VME COBOL Team Leaders.
ICL 2900 VME COBOL Programmers.
ICL Applications Manager Programmers.
INTEL 8085 or 8088 Expertise, All Levels.
MICHAEL JACKSON Structured Programming Techniques with COBOL

MICRO BASIC Programmers.
PASCAL Programmers.
PDP RSX 11M or RSTS/E Basic Programmers.
PDP 11-03 FORTRAN and Assembler Expertise.
SYSTEM X Expertise All levels.
TANDEM EXP All Levels many RQTS.
UNIVAC 1100 DMS COBOL Programmers.
UNIVAC SYS 90 VS9 COBOL Programmers.
VAX SYSTEL Programmers.
VAX VMS COBOL or FORTRAN Programmers.
VAX VMS DATATRIEVE Analyst/Programmers.
VENTEK DATAPOINT Programmers.
WANG COBOL or BASIC Programmers.

Contact: STEVE WHITING, STEVE CASEY, DEREK WADHAM, RAY GLEN, DAVE LONK-HURST, KEITH TAYLOR, PETER HOLLIDAY, MARK ATKINSON or SANDRA CAREY.

OVERSEAS 0252 516141

Contact: BILL EVANS

SAUDI ARABIA

6 months-plus assignments; September-October start
ANALYST PROGRAMMERS
IBM PL1 or COBOL with IMS
DB/DC. Preferably with OS
MVS, TSO/SPF

URGENT

MARK IV Programmers; 6 months' assignments; Immediate start.

GERMANY

12 months' assignments commencing September.
System Prog, IBM MVS + CICS, VTAM, BTAM, TCAM, TSO.

BELGIUM

8 months' assignment; Immediate start
Programmer PLM86 for INTEL 8086

OPERATORS 0252 516141



LONG-TERM ASSIGNMENTS

UNIVAC 1100 EXEC 8-OPS CONSULTANT
BURROUGHS 67/68/6900 MCP OPS
DATA ENTRY OPS
VAX VMS OPS
ICL GEORGE 3 OPS
ICL CME

Contact: ALAN PAINE or CHRIS MAGEE

MIDLANDS & NORTH 021-742 4431

IBM CICS DL1 COBOL or PL1
IBM COBOL with IMS
UNIVAC 1100 COBOL
PDP RSX 11/M or RSTS - E BASIC +
ICL VMEB COBOL IDMS or TPMS

PERMANENT VACANCIES 0252 516141

Datacontrol Manager, Surrey, c £9k + car
Order Processing and supervising experience

IBM Sys 34 RPGII A/Ps, Surrey, to £11k
Re-training will be given on RPGII

IBM SYSTEM PROGRAMMERS
OS/VS1 or DOS VSE, preferably with CICS
c. £12k for Middlesex and Hampshire

For further advice on these career moves contact Peter Jazeph for an immediate, confidential interview or write enclosing a detailed c.v.

TRIDENT COMPUTER SERVICES PLC

THE PUBLIC HOUSE THAT CARES

TRIDENT HOUSE,
38/44 VICTORIA ROAD, FARNBOROUGH,
HANTS, GU14 7UD. Tel: 858 233
Tel: Farnborough (0252) 516141

ELMDON HOUSE,
2291 COVENTRY ROAD, SHELDON,
BIRMINGHAM B26 3PS
Tel: 021-742 4431

Licenced by the D.O.E. as an Employment Agency & Employment Business BE(B) 149

Weapon Systems Technology

Wherever the challenge, you'll be in your element.

Underwater, on land or in the air, our sophisticated weapon systems are constantly pushing back the frontiers of advanced electronics technology.

So whatever your particular area of interest, we can promise you a professionally exacting software or hardware challenge at the Bracknell Division (formerly Sperry Gyroscope) of British Aerospace Dynamics Group.

We can also promise you the working conditions and in-house computing facilities which you would associate with a successful, expanding company.

Competitive salaries are negotiable on the basis of experience and attractive benefits include a generous pension scheme, 25 days holiday, relocation assistance where appropriate and a thriving sports and social club.

Programmers

Opportunities exist for senior and less experienced programmers to assume software engineering roles with small teams engaged in the design and development of mini and micro based systems. Projects cover a range of applications which include Communications, Underwater Weapons, A.T.E., Gunfire and Missile Control Systems.

Experience in both high and low level languages, familiarity with real-time operating systems such as RSXII and an understanding of Defence Industry Standards will all be advantageous.

Hardware Engineers

Electronics Engineers with at least three years' electronics design experience are needed to work on digital and analog interfaces for mini and micro based systems operating in a defence environment.

A thorough knowledge of digital or analog electronics will ideally be supported by software specification experience and it is anticipated that applicants will be qualified to at least HNC level in Electronics Engineering.

We also have opportunities for Computer Design Engineers, to work on digital computer design, microcoding, special purpose signal processing design and embedded software for microprocessors.

Systems Engineers

We also require Systems Engineers at both senior and junior level whose work will be associated with analysis, design, development and trials of complex computer controlled weapon systems.

These positions demand an appreciation of hardware and software engineering aspects, hence experience of R/T systems, man/machine interfaces and computer interfacing is desirable.

Our projects are varied; therefore experience in communications, signal processing, message switching, EW systems, trainers, simulators, test and instrumentation systems, fire control, underwater or guidance systems, is desirable and candidates should hold a degree or equivalent qualification.

If your experience falls into one of the categories above, we look forward to hearing from you. Write or telephone for our application form and job description or forward a full c.v. to Tony Clarke, Senior Personnel Officer, British Aerospace PLC, Dynamics Group, Bracknell Division, Downshire Way, Bracknell, Berkshire RG12 1QL. Telephone Bracknell (0344) 3222. Please quote Ref. CW16982.

**BRITISH AEROSPACE
DYNAMICS GROUP**
at Bracknell

Unequalled in its range of job opportunities.

Freelancers . . .

. . . in the North of England and Scotland who are available now or in the near future are invited to contact me, Peter Moore, to discuss a variety of interesting and rewarding assignments throughout the UK and overseas.

P-E Computer Services Limited
Winchester House, Fountain Street, Manchester M2 2EF. Telephone: 061-225 2775 (0016)

PE

Logitix Logitix Recruitment Limited
10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

Technical Manager London: Salary to £20k

A rapidly expanding supplier of Business Systems and Network Products is seeking a Technical Manager for its London-based Sales and Support operations. Candidates, aged 25-30 years, should have a thorough and wide-ranging appreciation of the microcomputer market place and in particular, 16 and 32 bit microprocessor based network systems. You will probably be currently employed as a Sales and Marketing Manager or Systems Support Manager with a

Total Systems Supplier or Computer Manufacturer. In addition to highly developed technical skills, the successful candidate must enjoy liaising with both professional and non-technical users. You should thrive on concentrated and hard endeavour and be prepared to travel both nationally and internationally. The Company's salary and remuneration package is excellent and reflects the importance of the position. Ref: L/37/A

C + UNIX Designers Greater London: Salaries to £11k

An internationally recognised Total Systems Supplier is embarking on a new phase of development and requires a number of Software Engineers to assist its expansion. Fluency in C or Pascal is essential. Experience of mini (PDP11) or micro (M6800/280) based systems is preferred, especially if combined with Systems Software involvement.

Numerous candidates will undertake the on-site or existing applications software to run under UNIX and, also, will be responsible for the design and commissioning of systems software. There is, therefore, a prime requirement for applicants with in-depth knowledge of the utilities offered by UNIX. Ref: L/37/B

DEC Consultants Central London: Salaries to £17k

The UK Headquarters of a leading international Systems Supplier and Consultancy is currently seeking additional Consultants for its offices in Central London. Suitable applicants will be aged 26-35 years and educated to at least degree level. Your technical experience, probably gained within a consultancy environment, should include working on several major projects based around DEC PDP11 or VAX11/780 hardware. Applications areas of interest will be Data Communications, Viewdata, Office Automation or Distributed Processing. Since these positions will involve a high degree of client liaison, you will be expected to be personable and possess good personal communication skills. In particular our client will be seeking candidates who demonstrate an innovative approach to problems and the ability to act on their own initiative. Ref: L/37/C

Real-Time Applications London/EEC: Salaries to £14k

A highly successful British Systems and Software House has outstanding opportunities for real-time software experts from Programmer to Team Leader level. Applicant should offer at least two years' real-time programming experience in either FORTRAN, PASCAL, MACRO 11 or Assembler. Particular hardware experience is not important, but you will be expected to have had experience in a leading mini- or micro-computer applications areas of interest are Data Communications and Networks, Message Packet Switching, Process Control or Defence. Candidates who demonstrate management potential will, of course, be considered for the more senior positions. Ref: L/37/D

Process Control Systems London & Home Counties: Salaries to £11k

Systems Software Engineers, with between two and five years' software design experience are urgently sought by a major supplier of micro-based industrial control systems. All applicants should possess at least one degree, preferably in a numerate discipline, and be fluent in an Assembler and a high-level block structured language. There is a strong preference for candidates with exposure to Z80 or T.1 9900 hardware especially where these have been utilised in tightly or loosely coupled networks. Good verbal and written skills are required as there will be an element of customer contact during design studies and commissioning. Ref: L/37/E

Robotics Software London: Salary to £12.5k

A supplier of Robotics Systems has a number of extremely rare opportunities for Robotics Software Development Engineers to join its Central London Headquarters. All candidates must offer a minimum of B.Sc. degree, preferably Electronic Engineering or Computer Science. Preference may well be given to those who have post first degree experience either within academic (M.Sc. or Ph.D.) or industry. All candidates should demonstrate an appreciation of the theory of robotics technology and also have a real desire to participate in the utilisation of robots within a mass production environment. There is no stated hardware or software preference but clearly you should have an in-depth knowledge within one or more of the following specific areas: tactile and automated vision sensors, object and shape recognition, artificial intelligence, laser scanning, speech synthesis and image processing. Ref: L/37/F

Micro S/W Development Cambridge: Salaries to £12k

Programmers and Software Team leaders are urgently required to assist in the development of applications and systems software for a new generation of micro-computers. Successful candidates for the positions of Team Leader will be fluent in a high-level, block structured language and have specified and implemented at least one complex, Working in-house, their responsibilities will include the design, development and commissioning of systems software and the evaluation of commercial packages submitted by sub-contractors. Programmers will also be expected to offer fluency in a block-structured language and, preferably, have gained the majority of their post-graduate experience on micro-based systems. Ref: L/37/G

Navigation Systems Inner London & Home Counties: Salary to £12k

A highly regarded supplier of precision instruments and electronic devices is seeking several Software Development Engineers for its Central London support facility or its Thames Valley-based Research & Development Laboratory. Suitable applicants must be numerate graduates who are currently involved in the design and development of micro-processor based control systems. Practical programming skills must include total fluency in one of more of: Pascal, Fortran or Macro 11. Candidates should have the ability to resolve complex software problems for end users demanding total reliability or where operating conditions are not necessarily conducive to high technology products. Ref: L/37/H

Licensed by D.O.E.

Ref: L/37/H

BOX NUMBERS

Box number replies should be addressed to:

Box Number . . .
c/o Computer Weekly
Quadrant House
The Quadrant
Barton, Surrey GU2 6AG

Electronic Laser Printing-

The Way ahead

As a major multi-national leading the world in integrated office automation, our client is firmly committed to the development of computerised laser printing equipment.

To support this commitment, they are expanding their Office and Systems automation group which deals specifically with the unique European requirements of such systems where the major challenge is the design of common multi-national products.

They seek ambitious confident people, who appreciate a challenge, and are prepared to

apply their problem-solving ability and experience to a rapidly expanding range of printing and publishing systems. In particular they seek applicants for the following jobs, based in the Home Counties:

Specialist Software Analyst c £12,500

A good communicator with programming experience in COBOL and FORTRAN on IBM and DEC II mainframes, seeking to combine this with his/her knowledge of printing and publishing practices to resolve customer/system problems and play a key role in guiding future developments. Anticipated age, consistent with the experience requirements, is mid 30's.

Specialists - Software Systems and Electronics c £9,500 - £11,500

Confident persons with several years software/hardware design experience, ideally including DP/text and line printing with a data communications bias and looking for a central role between the design organisation and the customer. The applicants should have several years experience in the development of digital equipment and control systems and prepared to apply this to all aspects of customising printing systems to the European multi-national market. Specific experience in the following areas is desirable: telecommunications, word processing, typography, micros.

Travel to the USA and Europe will add spice to the more senior jobs. A working knowledge of European languages would be very useful. Successful candidates can expect a benefits package and career prospects they would associate with a major multi-national company. Relocation assistance will be provided as appropriate.

Write with a full C.V. in the first instance to Robert Leake, Managing Director, Robert Marshall Advertising Limited, 44 Wellington Street, London WC2E 7DJ, quoting reference CW.



Please list separately any companies to whom you do not wish your application forwarded.

PRIMAX COMPUTER SERVICES

- SYSTEMS ANALYST** E. Mag. A minimum of five years' experience in a commercial IBM environment is required for this position and a good grounding in CICS is essential. London Ref. 100A
- PROG/ANALYST (1-2)** E. Mag. One-three years' solid IBM Cobol to work on commercial applications for a major company. Knowledge of CICS would be helpful. London Ref. 120B
- ANALYST/PROGS** E. Mag. With two-three years' solid IBM Cobol and CICS in a commercial environment. London Ref. 100B
- PROGRAMMER** E. Mag. An interesting opening for a solid Burroughs programmer to work with and deputise for the dpm. Should have some exposure to systems and users as the job will entail analysis and user liaison. Knowledge of DMSII, CANDE, LINC would be useful. London Ref. 142A
- ANALYST/PROGRAMMER** E. Mag. Two-three years' HF3000 experience using Cobol. Must have good exposure to systems work. Home Counties/London Ref. 106A
- ANALYST/PROGRAMMERS** E. Mag. Around three years' experience in IBM Cobol, CICS and DL1 will be necessary to fill these demanding positions in the banking sector. London Ref. 107B

These are just a few of our many permanent vacancies. IBM Cobol CICS DL1 Conrads: Urgent requirements - London. For further details please phone or write to:

PRIMAX COMPUTER SERVICES
176 MITCHEAM ROAD, TOTTENHAM, LONDON, S.W.17
PHONE: 01-872 8648
Lit. No. SE5897

OVERSEAS SALES CONSULTANT

Computer Search (Contracts) Ltd are a highly successful contract agency and having established a broad base of clients in the U.K. are now looking to expand into the overseas market by recruiting a person to be responsible for setting up an international division.

Ideally he/she will be 25-35, be able to show a successful career progression to date with at least 18 months to two years' experience placing contractors or permanent staff overseas.

Remuneration including basic salary and commission will be commensurate with the position, a company car will also be provided.

In the first instance please contact Tony Cotton on (0442) 40761. Computer Search Contracts Ltd, Hamilton House, Marlborough, Hemel Hempstead (0442) 40761

Welwyn Hatfield District Council

Senior Programmer

Salary up to £7,137
Pay award pending

Required to participate in the development of a property database using IDMS software, a successful applicant will ideally have 2-3 years COBOL experience, preferably with VME2800 and also have IDMS experience although training could be provided.

The person appointed will also play a major role in the further development of interactive word processing, cash receipting etc., providing both technical skills, consultancy and training.

Programmer

Salary up to £6,333
Pay award pending

Required to work on both the development of the property database and enhancements of our existing financial base. Applicants should therefore have 1-2 years COBOL experience preferably with VME2800 and/or IDMS.

Both posts carry a London outer fringe rate allowance of £171 pa plus an incentive bonus of half-yearly. Other benefits are: Housing, pension, medical, holiday, etc. The successful applicant will be offered a house purchase, 100% removal expenses, etc. Further details from Computer Services Manager, Welwyn Hatfield District Council, Welwyn Offices, Welwyn Garden City, Herts. Tel: Welwyn Garden 31212, ext. 212.

UNIVERSITY OF LONDON GOLDSMITHS' COLLEGE

Applications are invited for the following new posts: connection with the installation of a DEC VAX 11/78 computer to provide computing facilities through the College:-

TWO APPLICATIONS ADVISORY PROGRAMMER

Applicants should have experience of programming in BASIC, FORTRAN, ALGOL, PASCAL and of solving users. They will be expected to provide programming support to members of staff and assist users to find appropriate solutions to their computing requirements.

Salary within the range £7,125 x 6 increments to £8,661 per annum inclusive.

Write for further details the Personnel Officer, University of London Goldsmiths' College, New Cross, London, SE14 6NR. Closing date for applications 1st October, 1982.

NORTH STAFFORDS POLYTECHNIC

Faculty of Computing, Humanities and Social Sciences, Department of Computing, SENIOR LECTURER/LECTURER GRADE II IN COMPUTING

Applications are invited for the post of Senior Lecturer/Lecturer Grade II in the Department of Computing. Candidates should be able to teach specialist areas of computing at Honours Degree level such as: Processing, Systems Analysis, Information Systems, Graphics, etc. Applicants with other suitable computing experience in computing will be considered.

Salary Scale: Senior Lecturer: £10,175-£11,250 (Bar) £12,216 Lecturer Grade II: £8,865-£10,021

Application forms and leaflets may be obtained from the Personnel Office, North Staffordshire Polytechnic, College Road, Stoke-on-Trent ST4 2DE. Tel: Stoke-on-Trent 45531, Ext. 287. Closing Date: 1.10.1982

SOUTH COAST

If you want to know what roles are currently available in Southern Counties Ring

Jeff Howard (Managing Director)

CBS APPOINTMENTS 1 Woodstock Gardens, Bournemouth (0202) 250201 or 0202 804001 (Even & Week Days)

BOX NUMBERS

Box number replies should be addressed to:

Box Number: c/o Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 6AS

INFORMATION MANAGEMENT TECHNIQUES LTD.

CONSULTANT LECTURERS

Remuneration Package to £16000

IMT Ltd a member of the £200M turnover Pergamon BPCC Group is entering a significant period of expansion in all areas of computer consultancy and training.

To keep pace with this growth we are seeking genuine professionals to lecture and undertake assignments in the following areas of expertise:

- Project Management
- Systems and Programming
- Database
- Operations

If you have solid experience in any of the above, the ability to communicate and a desire to work in a challenging and rewarding environment, telephone Mrs A. Schofield on 0727 65518 or forward your CV to the St. Albans office.

National Mutual House, 66, London Road, St. Albans, Herts.

imt

Locations: London, St. Albans, Maidenhead

Programmers to Project Leaders

£8,000 - £13,500

A challenging career with one of the UK's largest independent software houses. If you have any of the following skills, get in touch now.

IBM COBOL PL/I DL/I ADABAS CICS
ICL COBOL IDMS TP TPS
HONEYWELL COBOL DMIV TDS

Marcol offers a progressive career path, equity participation and a full range of first class benefits.

Take a share in our success!

Ring or write now to Virginia McGraa Marcol Computer Services Ltd, 60 Queen's Gardens, London W2 3AF. Telephone: 01-402 9355 (24 hour service)

MARCOL
Communication and Information Systems



IBM OPERATIONS SUPPORT

CROYDON c£9,500 + benefits

The NLA Tower in Croydon is the home of Hill Samuel Life Assurance, a member of the famous Hill Samuel Group. HSLA is about to expand its computing power significantly, to cater for the corporate systems needs into the 1990's. Hardware will be dramatically increased to a triple processor 4300 installation and plans to house it focus upon a brand new underground computer building. The installation uses a wide variety of IBM software including VM/CMS, OS/VS1, MVS, DOS/VSE and CICS.

The immediate requirement is for a first class production controller with the ability to foresee potential problems within production systems and neutralise them before they occur.

Experience must include liaison with users, including systems development, the creation and maintenance of OS or MVS JCL and the investigation and correction of application systems failures. Previous exposure to VSAM, VM/CMS or operational analysis would be an additional bonus.

HSLA offers a competitive salary plus a valuable benefits package which includes non-contributory pension scheme, productivity bonus, mortgage subsidy scheme and flexitime. For further information please contact Pat Barnes (24 hr answering service) quoting ref: CW/119

CAPP ASSOCIATES 01-686 9693 CAPP House, 96d South End, Croydon CR9 3SD. Computer and Professional Personnel Consultants

FOR CLASSIFIED ADVERTISING USE

DIRECT LINE
01-661 0121

SOFTWARE SPECIALIST REQUIRES VAX/VMS CONTRACT WORK

in North-West England or abroad.

15 years d.p. experience
5 years DEC experience
available November 1982.
Ray Chapman 061-428 0608 after 6pm

UNIVERSITY OF LONDON GOLDSMITHS' COLLEGE

COMPUTER PROGRAMMER

A programmer is required as soon as possible for software development and maintenance of an automated library circulation system. Applicants should hold a degree or equivalent qualification. They should be experienced COBOL programmers, preferably with experience of its implementation on microcomputers.

Salary within the range of £7,125 x 6 increments to £8,661 per annum inclusive.

Write for further details to the Personnel Officer, University of London Goldsmiths' College, New Cross, London, SE14 6NR. Closing date for applications 1st October, 1982.

LOUGHBOROUGH UNIVERSITY OF TECHNOLOGY

Robots in Manufacturing

Applications are invited for two posts as RESEARCH ASSOCIATES to work on a SERC sponsored and industrially supported project which will concentrate on various aspects of microprocessor control and the use of industrial robots in manufacturing systems. Applicants should hold a good honours degree or equivalent preferably with industrial experience in either the application of digital systems or the design of production systems. The successful applicants may be permitted to register for a higher degree. The posts are suitable for up to two years at a salary within scale £3,375 to £5,275. Write giving particulars to Dr. N. H. Weston, Department of Engineering Production.

Loughborough, Leicestershire

Programmers

Cambridge
£8,000 to £12,000

Specialising in computer aided engineering this organisation has grown in expertise and expanded with the technology itself so that today it is internationally respected as a leader in its field.

They are currently developing systems to run on a network of dedicated single-user workstations and on time-sharing systems using a variety of hardware.

They have a need for high calibre programmers to work on both the applications and environmental software.

Applicants should have experience of working on large Fortran programs or of developing operating systems or communications software on mini or micro computers.

Ideally, candidates will also have been involved in the re-implementation of programs on a variety of hardware and have had some exposure to CAD or CAM software.

These positions represent excellent career opportunities in a growth industry based at an attractive location.

Please Contact: David Hendry

Ferguson Thorley Bowles Associates Limited

International Personnel Consultants
15 Clarence Street, Staines, Middlesex TW18 4SU
Telephone: Staines (0784) 59147. Telex: 8814148

Dep. no. 134

CONTRACTORS WITH ANY OF

THE FOLLOWING SKILLS

PERKIN ELMER/BASIC/FORTRAN (BELGIUM) SIMULATION MODELLING
APL VM/CMS PL/1 RPGII/SYS 38 PL/1, CICS PDP/RTSE/
BASIC+ PL/1, IMS H66 IDS IBM 5280 DE/RPG COBOL/
CICS/DLI VME/B IDMS COBOL/CICS/COPICS OS PL/1 ASSEMBLER
..... CORAL 66 H66 IDS/DM4 DOS PL/1 + DATABASE ADF
..... COBOL/CICS MARK IV/MS/TSO PDP/RTSE/BASIC+ (PROJECT
LEADER) ADABAS ADABAS DESIGNER (HOLLAND) G2/VMEB/CONVER-
SION TP MANAGER OS COBOL NATURAL

CALL CLAIRE OR LYNN IMMEDIATELY
01-388 2061



357 Euston Road London NW1 3AL

01-388 0111 (24 Hours) Licence No. 852/AM/82

PERMANENT RECRUITMENT CONTRACT SUPPORT DATA PRESENTED BY

RPGII

Analyst/Programmer

West London

£10-12,000

Move into management!

Ever wanted to manage a DP department? Develop and modify a wide range of applications, supervise a small team and liaise with users.

This position as Data Processing Manager exists with the UK subsidiary of a major American engineering company in the capital equipment market. An IBM System 34 (128k) is currently in use. Accounting and production systems are operational with a staff of three running the installation.

Reporting to the Financial Director you will be responsible for efficient management of the department and provision of effective DP systems.

You will have three to four years' experience of RPGII programming and systems analysis in an IBM GSD environment. The seniority of the position means you will need self-confidence, ability to make decisions and skills of communication at all levels. Training can be provided in all aspects of man-management.

If you are ready to accept the challenge of your first move into management then call Stephen Brown on the number below quoting ref. B/7496.

ABRAXAS
Computer Employment Ltd.

SE(A) 3839

01-388 0111

LOOK
FORWARD TO
A DP Development to meet
the needs of the 1990's

LOOK
FORWARD TO
A DP Development to meet
the needs of the 1990's

Focus on Analysts & Programmers

The NLA Tower in Croydon, the Image in our binoculars, is the home of Hill Samuel Life Assurance (HSLA), a member of the famous Hill Samuel Group (merchant banking, insurance, pensions, shipping). HSLA is about to expand its computing power significantly, to cater for the corporate systems needs into the 1990's. A whole new range of systems is to be developed for users, both directly by the systems and programming group and by the application of users tools such as APL, report generators etc. Hardware will be dramatically increased to a triple processor installation, two IBM 4341's and a 4331, and the plans to house it focus upon a dramatic new underground, ultra-modern computer building. The new development program needs considerable expansion of people resources. In both Systems Developments and Production Services, and HSLA will be expanding its DP department by over 60% in the next year. This has to be one of the major new computer systems developments South of the Thames, commenced within the last twelve months.

All positions enjoy the HSLA benefits package:

CAPP ASSOCIATES
01-686 9693

Capp House, 96d South End,
Croydon CR9 3SD.
International & UK Recruitment
Consultants

* Productivity Bonus * Mortgage subsidy
scheme * Non-contributory pension
* Luncheon Vouchers * 4 weeks' holiday
* Family BUPA * Flexitime * Interest free
or low interest loans.

For further information please write
or telephone (24 hour answering service)
quoting ref: CW120-2P.

PROGRAMMING TEAM LEADER £11 - £13K

Technical experience must include a minimum of 5 years' IBM Cobol, in-depth OS/JCL or Command Level CICS and either strong supervisory skills or extensive technical knowledge. Familiarity with a recognised structured programming methodology is mandatory.

ANALYST/PROGRAMMER £9 - £11K

Would suit a competent Analyst/Programmer with at least 18 months' IBM Cobol, 12 months' systems analysis experience and a sound working knowledge of either OS/JCL or CICS Command Level. This position will appeal to an individual who wishes to combine both user contact and technical involvement.

SYSTEMS ANALYSTS £9 - £11K

The bridge between the business requirements of the user and technical definition for the programmers. An analyst must have the personality and ability to work closely with users and with all levels of technical colleagues. Background must include the successful implementation of at least one system (or major subsystem) and a programming background, preferably on IBM equipment.

SENIOR PROGRAMMER £9 - £11K

A minimum of 3 years' IBM Cobol experience, with a sound working knowledge of OS/JCL and Command Level CICS is required. This position will suit a technically orientated programmer who wishes to remain close to the hardware.

NEW RECRUITMENT CONSULTANCY BIRMINGHAM

A new consultancy is due to open in Birmingham in the near future and we are seeking two Recruitment Consultants to start the operation. Experience in selling recruitment consultancy is essential. We are particularly eager to seek a Senior Consultant who is a self starter with the ability to control others and to have the business acumen to run the operation. The package is initially worth circa £20,000 for the Senior Consultant and circa £15,000 for the Consultant and both are provided with company car. Future plans provide for further diversification which could take your earnings higher.

All applications will be treated in the strictest confidence.

Please write to: Box No. 1219, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS.

CONTRACT

IBM 5280 RPG ASAP OCT + NOV VARIOUS ref 57, 60, 82
IBM 8100 DPPX ASAP LONDON 83
IBM PL/1 CICS ASAP OCT LONDON 60
IBM COBOL DOS CICS ASAP LONDON 64
IBM SYSTEMS 38 RPG III ASAP MIDDX 66
ICL COBOL with VME/B or DMS ASAP + OCT LONDON 74
DEC VAX with good DATATRIEVE ASAP HOME COUNTIES 67
DEC VAX COBOL VMS OCT + NOV HOME COUNTIES 80
UNIVAC 1100 COBOL SEPT + OCT VARIOUS 68, 70
BURROUGHS B6700 COBOL DMS SEPT + OCT S. LONDON 75
BURROUGHS B1800/1900 COBOL ASAP HOME COUNTIES 81
FERRANTI ARGUS with CORAL 66 ASAP 78

For further details on request. Please telephone Joan or Jane on Amersham (02403) 22201 or send your c.v. to Plymouth House, London Road, Amersham, Bucks HP7 0HE.

ALL REPLIES QUALIFY FOR OUR MINI COMPUTER DRAW

**PROGRAMMING
& SYSTEMS LTD**

DATABASE PROGRAMMER c £11,000+

UNIVAC
Well-known company in London require a Data-Base Programmer to supplement their established team. A thorough knowledge and understanding of DMS 1100 and Cobol is required as the position carries the status of Senior Programmer. Although there are expansion plans within the area a degree of maintenance work is expected. A very professional outlook and attitude is required from interested applicants.

SYSTEMS PERSONNEL to £10,000 + car

BRISTOL
Retail chain based in Bristol have a requirement for two experienced Systems Personnel. The two people will have complementary skills and experience so as to cover the computer spectrum of retailing, stock control, equipment, etc. Experience of more than one manufacturer's hardware and of implementing a similar system, i.e., stock/sales control would also be required.

ANALYST/PROGRAMMERS c £10,000

BURROUGHS
Well-known company based in Essex require experienced programmers and analysts. The minimum requirement is two years' systems experience using COBOL, preferably on Burroughs hardware. Good academic qualifications, either a degree or HND are also a precondition for these posts. Successful candidates should also be prepared for travel within the U.K. and Europe.

ANALYST/PROGRAMMERS to £11,000

HP BASIC/SPL
Expanding specialist software house with offices in Central and West London seek computer professionals with experience of HP 3000 or 260 machines. Candidates with a good academic background are preferred and in return will receive an excellent salary and package which includes annual bonus, flexitime and company car scheme.

PROGRAMMERS £ NEG.

HP COBOL
Well-known City financial concern with an extensive commitment to computer development requires a programmer with 1-4 years' COBOL, which must include some HP 3000 experience. Initially all work will be of a development nature thereby ensuring good career prospects. Perks include sub mortgage, loans, etc.

ANALYST/PROGRAMMERS c £10,000

PRIME/MINI COBOL
Two expanding software houses using Prime machinery require Analyst/Programmers with approx. 3 years' COBOL gained on PRIME or similar equipment. One company is based in North London and the other 8, London, both offer stimulating positions in dynamic environments.

PROGS & AN/PROGS £ NEG

HONEYWELL L66
Progressive installation based in N. Surrey/S. Middx. is seeking to further enhance its programming and system departments so creating the above mentioned position. Applicants should possess a sound knowledge of IDS data-base systems, together with 2-3 years' COBOL experience gained preferably within a commercial organisation. Perks are many and varied including the possibility of a company car after a short qualifying period.

PROGRAMMERS c £10,200

RPG11/RPG111
Two international banks based in the City have requirements for RPG programmers. Both are MIDAS users and would be interested in applicants with MIDAS experience but realistically any banking/financial knowledge with a solid RPG background would be acceptable. As well as banking benefits applicants can expect early exposure to System 38.

PROGRAMMER c £8,000

BASIC/RTS8
A systems house specialising in DEC systems has a requirement for 2 BASIC+ programmers. Applicants should have around 18 months' BASIC+ gained in any commercial environment. This is an ideal opportunity for programmers to move on to VAX systems as the client is installing several of these systems.

CSD PROGRAMMER/ANALYSTS £ NEG.

RPG11/RPG111
We have many clients, all of whom are SYS34 or SYS38 users, who have current requirements for programmers and analysts. Applicants should have a minimum of 6 months' RPG gained in a commercial environment through to 3 years' for the more senior consultant positions. The companies range from banking to manufacturing and offer a wide range of benefits.

PROGS & AN/PROGS to £11,000

HONEYWELL L6
A manufacturing concern and bureau company situated in the West London area are currently seeking D.P. professionals with a minimum of 18 months' COBOL experience. Exposure to TOL and associated applications and packages would be a distinct advantage, however not essential as training will be given where necessary. Due to the progressive mode of development projects a sound understanding of analysis and design is required for the Analyst/Prog position. Perks are varied.

This is just a small selection of current requirements: for details of these and others not advertised call us now.

APEX COMPUTER RECRUITMENT LTD

APEX

LONDON
59 Gray's Inn Road
London WC1X 8TL
Tel. 01-404 4821, 24 hrs.

BRUSSELS
Rue Gatti de Gamond
Uccle 1080 Brussels
Tel. 010 322 377 4911

£17-30,000 Tax Free

Plus free housing, transportation, medical cover, home leave, flights, bonuses, etc.

The leading Saudi Arab Consulting Group require additional personnel for the following projects.

* **INTERNATIONAL AIRPORTS PROJECTS**, IBM experience is essential for all jobs at IAP. Currently 30XXs under MVS/JES 2 using ADABAS, COM-LETE, NATURAL, ACF/VTAM and NCP, also MSA packages.

* USER LIAISON SECTION MANAGER

£20-30,000

To set-up and run the Liaison Section, responsible for cross implementation and enhancement of systems.

Applicants should have a minimum of 10 years' DP experience including project leading, systems development and implementation, also very considerable client negotiation and liaison. They must be mature, should have worked in a database, data communications environment and have a high level of technical expertise. A degree or Business qualification would be an advantage.

* USER LIAISON SECTION MANAGER

£20-26,000

To supervise a project team of up to 6 staff. To direct analysis, programming, documentation and implementation of new and existing applications software.

Applicants should have a minimum of 8 years' DP experience which must include database, data communications and COBOL. Some experience of text management and micrographics would be a distinct advantage.

* ANALYST PROGRAMMER

£18-22,000

To be a senior member of the team responsible for analysing, designing and implementing materials management and warehousing systems.

Applicants must have a minimum of 5 years' experience in an on-line environment, at least 2 years' as a Systems Designer or Analyst/Programmer. Good liaison and communications skills are essential, as is COBOL, NATURAL, ADABAS or COM-LETE would be a definite advantage.

BUSINESS DEVELOPMENT CONSULTANT

£20-25,000

To identify, develop and secure client business opportunities. Applicants should ideally have a degree or business qualification and a minimum of 8 years' DP experience which must include systems design, programming, proposal preparation, both written and oral. Good appearance and the ability to work in an independent mode are essential.

DATABASE MANAGER DATABASE ADMINISTRATOR SENIOR SYSTEMS ANALYSTS SENIOR PROGRAMMERS

£20-30,000

£20-25,000

£18-25,000

£17-22,000

For a Forces Logistics Project using 4300. Experience with IMS or ADABAS is essential. COM-LETE or CICS experience desirable as is a degree. COBOL, MVS & ACF used.

SYSTEMS PROGRAMMERS

£20-26,000

To be responsible for systems generations, applications program interfacing, JCL, utilities, etc.

Applicants should have a minimum of 5 years' DP experience of which at least 2 must have been working as a Systems Programmer.

- For the Saline Water Project OS/VSE with CICS experience is essential, ideally some VM.
- For the Electrical Supply Project DOS/VSE, ideally with CICS, DL/1 and some database.
- For the Logistics Project MVS, VTAM experience is essential.

Contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947 up to 10pm weekdays (ansaphone available at all other times), or Jenny at weekends on Beaconsfield (04946) 4579. Please quote Ref. 9928.

DALROTH & PARTNERS LTD ● 4 HALF MOON STREET ● LONDON W1

(0838)

FIELD SERVICE

LONDON, HOME COUNTIES, MANCHESTER
£7.5K + BUPA + O/T etc

We have been exclusively retained by a major new name in business systems. Unique in many ways, this exciting company is planning to extend its growth (currently 500% p.a.) in all areas, and to offer unparalleled career opportunities to young enthusiastic engineers seeking full system involvement.

LONDON, HOME COUNTIES (N.S.W.) + SCOTLAND
£9.5K + EXTRAS + CAR

Major U.S. Mini manufacturer - large systems - seeks two ambitious engineers to expand their mini experience with a young team. Opportunities to work on large systems to component level. Training in Sales and real prospects to progress to Tech. Support.

LONDON, HOME COUNTIES £9.5K + + + CAR, etc

Leading CAD/CAM manufacturer is now able to offer experienced computer engineer superb opportunity to break into this expanding branch of the industry.

Call KEITH WALLIS for details of any of the above plus many others at all levels NOW on:

ALLTRONICS PEOPLE (AGY)
01-545 4834 or 04965 1014

UNIVERSITY OF BIRMINGHAM

Department of Physics

Hardware Engineer

Applications are invited for the post of Hardware Engineer (male/female) in the Elementary Particle Physics research group. The successful applicant will be required to design and commission electronic equipment including microprocessors.

A degree or equivalent in an appropriate subject with a substantial electronics content is required. Some experience in an electronics service and development environment is desirable.

The post is funded on Scale 1B (£5,500-£9,200) by a rolling grant from SERC. The appointment will be for two years initially.

Applications should be made to the Senior Assistant Secretary, University of Birmingham, P.O. Box 363, Birmingham B15 2TT, from whom application forms and further particulars are available, to reach him by Monday 4 October, 1982. (0800)

OPS MANAGER

LONDON £19,000
Strong IBM and Management experience in an MVS environment is required for this challenging position.

SNR OPS/S LDR

LONDON to £11,000 + Mort.
2-3 years DOS/VSE (E), VTAM, CICS (preferred) plus self motivation is required for these 3 positions.

DATA CONTROL CLERK

CITY £7,000 + Mort.
Expanding Bank site seeks experienced D.C.'s any Mainframe background. Excellent candidates apply. Ref. 89317.

For further details please contact Bulok Computer Services on 01-834 6923 (daytime) or 01-834 0051 (24 hrs.) or write to:

BES 72 Rochester Row, SW1 1JU

Appointments Bristol Polytechnic

COMPUTER STUDIES & MATHEMATICS DEPARTMENT

Lecturer II Senior Lecturer IN INFORMATION SYSTEMS ANALYSIS

Ref. No. L/57

Applications are invited for the post of Lecturer in Information Systems Analysis, duties to commence on 1 January 1983 or as soon as possible thereafter. Applicants should have a demonstrable interest in Information Systems Analysis within the framework of Information Systems in Organisations. The ideal candidate would have a background in both theory and practice in this area as well as familiarity with relevant social aspects of organisations. An ability to participate additionally in the more general teaching of the analysis and design of computer-based information systems would be an advantage.

SALARY SCALE:

L1 £6,856-£10,173 (bar) - £11,022 per annum

SL £10,173-£11,964 (bar) - £12,816 per annum

The appointment will be made on the appropriate scale according to relevant previous experience/service (progression from the L1 scale to the SL scale is in accordance with the provisions of the Burnham Further Education Report).

Applicants should have a good honours degree and preferably a higher degree. The successful candidate will be expected to participate in the research/consultancy work of the Department.

For further details and an application form, to be returned by 1st October 1982, please contact the Personnel Office, Bristol Polytechnic, Coldharbour Lane, Frenchay, Bristol, or ring Bristol 658261, Ext. 575.

Please quote Reference Number L/57 in all communications.

Career in Computers

We have a PDP 11/34 mini computer and a larger VAX computer which will eventually form part of a network of DEC computers and word processors. The system assists our scientists with the recording and the analysis of critical drug safety evaluation data.

To help us maintain the smooth running of the system we need a computer operator/programmer, who will, after the necessary training, carry out the day to day running of the system, and join our team writing programs for its further development.

Male and female applicants with some experience in operating and/or programming will be preferred. Those with a minimum of 'A' Level Maths and 'O' Levels in English and a science subject, together with the appropriate aptitude will also be considered.

Further details of the system, software, languages etc are available on request.

If you would like to apply please telephone our 24 hour answering service on Harlow (0278) 419373, leave your name, address and quote reference number 16/82 and we will send you an application form.

Beecham

Pharmaceuticals

DESIGN ENGINEERS

Experience of logic design and micros. Electronics qualification required. Berks. To £16K

SENIOR SOFTWARE ENGINEER

At least five years' experience in micros, communications, and time for Design and Project Management. London. To £19K

SYSTEMS ENGINEER

Two years' experience of micros, and low level software design. Knowledge of Z80. Oxford. To £10K

ENGINEER

Excellent prospects for engineer with good DEC background. South London. £6K

JUNIOR ENGINEER

Young engineers with good educational background. London. £5K

For these vacancies and more throughout the UK, call Diana on 01-483 3438 or 01-680 6883 between 9pm and 6pm Saturday/Sunday only.

CAD SOFTWARE DEVELOPMENT

The design of a new generation of a Small Business Computer system at Burroughs Cumbernauld will utilise sophisticated design automation techniques including the use of advanced workstations.

Opportunities exist at all levels within an expanding CAD department for personnel with experience in one or more of the following:

- ★ High level programming
- ★ Interactive Graphics
- ★ Logic Simulation
- ★ Hardware Description Languages
- ★ LSI and PCB layout software
- ★ Performance Analysis

Contact Paul Dunachie, Systems Development Group.

Burroughs, CUMBERNAULD G68 0BN, Scotland.

Telephone: 023 67 36136 (reversing charges)

Burroughs NEW COMPUTER SYSTEM

WE
NOW HAVE
A MAJOR NEW
SYSTEM TO
DESIGN

Senior Software Engineers for CGI

Appointments are to be made in the Instrumentation and Training Division of Marconi Radar, to work on high technology products including computer generated imagery.

Applicants (male or female) should be experienced software designers with good qualifications and knowledge of the constraints of real time process control. Familiarity with PDP 11, VAX 11, their operating systems and Macro 11 and Pascal languages would be desirable.

Write or phone Ronald Harle, Marconi Radar Systems Ltd., New Parks, Leicester LE3 1UF. Telephone 0533 871461.

Marconi Radar Systems



British Industrial Sand Limited

requires a

SYSTEMS ANALYST CHESHIRE - CIRCA £9000

British Industrial Sand Limited require an experienced Systems Analyst to join our Systems Development Team. Applicants will be aged between 25 and 35 and should have gained commercial background with at least three years experience gained on I.C.L. 1800/2803/DME Systems. Experience in on-line systems is preferred but not essential as training will be given.

Our present configuration consists of an I.C.L. 2946 computer with 1½ megabytes of memory and EDS and FDS backing store. Attached to the computer are 12 remote sites, with both interactive and APL terminals. We utilise T.P.S. to develop our on-line systems, all development work is carried out interactively.

The successful applicant may be eligible for removal expenses.

Apply in the first instance with details of your career to date to:-

lis

Mr S Dye
British Industrial Sand Limited
St Anna House, Parsonage Green
Wilmalaw, Cheshire SK9 1HG

Job Spot



SENIOR ANALYST:

TOP SALARY

First National Securities Ltd., a leading consumer finance company are on the threshold of major D.P. development which has created a need for a **Systems Analyst**. A senior member of the team, the analyst will lead projects from feasibility through to implementation and be responsible for documentation standards and support. Applicants are likely to have three years experience in a commercial environment with a programming background ideally on IBM equipment. Knowledge of financial applications and established user liaison skills are preferable. First National Securities offer a highly competitive salary and a range of benefits normally associated with a financial institution.

LOCATION: MIDDLESEX. JAS08/1.



PROGRAMMER

to £11,000

Cardkey Systems, a part of Fairchild Industries and V.S.I. Corporation, are the current world leaders in the Access Control Industry. To meet expanding business they require an additional Programmer to work on existing packages, customising them to clients individual requirements. In addition to holding a full driving licence, candidates should have a minimum of one year's programming experience in a real time environment using Macro II and Assembler on PDP11 Hardware. In addition to salary and usual large company benefits, including free BUPA, there will be an opportunity for occasional travel to Europe.

LOCATION: HERKSHIRE JAS08/2.



OPERATORS

& EXCELLENT

National Panasonic, a leader in the world of consumer and industrial electrical/electronic goods and components have recently upgraded their hardware strategy to dual IBM 4341's operating under DOS/VSE, utilising Power and CICS. To meet this progression they are seeking to recruit Operators with a minimum of eighteen months experience in an IBM environment using DOS/VSE. Excellent opportunities exist to become directly involved with systems programming and operations management. The department operates on extended days and no unsocial hours are involved. National Panasonic offer a highly competitive salary and benefits package normally associated with a large successful organisation.

LOCATION: SLOUGH. JAS08/3.



ANALYST PROGRAMMER

c £10,500

EPC is a major manufacturer of quality foods producing household names such as Knorr, Mazola and Hellmans. They are currently seeking an **Analyst Programmer** who will assume an important role in a compact team utilising an IBM S/386 supporting RPG III. Ideal candidates will have at least 4 years experience on GSD or mainframe hardware using RPG or PLI in an on-line environment. In addition to salary there are a wide range of large company benefits including discount on goods, subsidised restaurant and an active sports social club.

LOCATION: SURREY. JAS08/4.



CONFIDENTIAL REPLY TECHNICAL ANALYSTS

to £12,000

A leading worldwide shipping company has agreed a strategy placing them at the forefront of automated office technology. The technical support team have responsibility for analysing the requirements for hardware and software development, data communications, operations support and data administration. A commitment to planned expansion has created a requirement for **Analysts** with a minimum of two years experience in a Hewlett Packard or Tandem environment. Applicants will have planned, implemented and installed systems to recognised standards and procedures. Database and data dictionary analytical skills would be advantageous. Our clients offer excellent working conditions and benefits.

LOCATION: LONDON. JAS08/5.



PROGRAMMER

to £12,000

Microcomputer Products International are leading suppliers of software for GPM based micros. Planned expansion has created the need for an additional Programmer to provide customer support and develop programs and systems, utilising an extensive range of microcomputers. The successful candidate should have gained around five years programming experience in a large mainframe environment supporting Cobol. In addition a knowledge of Assembler is desirable and applicants will be able to demonstrate effective user liaison skills. Salary is in a range according to experience and in addition to usual benefits this position will attract free membership of BUPA.

LOCATION: DORSET. JAS08/6.

Action..

ring or send the coupon to
D.P. Recruitment Ltd.,
Freeport, London W8 2ET
01-567 5501

Name _____
Address _____
Home tel. _____ Work tel. _____
I am interested in Ref. _____

Communications Software Specialist (IBM bias)

Worcestershire

Our strategic plan is laid, our commitment is pledged and the Integrated Multi-System Network is our main objective.

We are no newcomers to communications technology and our current IBM VTAM/SNA environment puts us in the top ten of the most powerful computer installations in Europe. The way forward entails introducing intelligent multi-micro-processor communications networks to augment our existing 3705's and to give us X25, X3 and DSI capability with the eventual implementation of full SNA networking.

This new appointment will form part of a core of people providing the software expertise and technical direction necessary at all stages of development and subsequent support.

Our Candidates will probably be Graduates with a computing or communications bias, where experience

should incorporate a fluency in ASSEMBLER gained in technical software or systems programming. A practical understanding of C.C.I.T. communications protocols and standards is desirable, particularly X25, SNAP and BISYNCH and if possible packet switch system and SNA. Specific IBM experience should include a familiarity with 3705 FEP's and associated software.

We can provide you with a career opportunity that avoids the pitfalls of over-specialisation and additionally offers the prospect of taking on a variety of projects particularly evaluation of new software technology.

Candidates interested in discussing this position further should telephone Alan Carnell on 021-236 3781 (24 hour answering service) or 021-784 6063 (7-9 Evenings and Weekends).

Successful candidates from outside of the region will qualify for a generous relocation package.

Technical, Sales & Management Appointments

Specialist Computer Recruitment Ltd

SOUTH
James House, 46 James Street,
London W1M 5HS
01-936 0671/486 0461

MIDLANDS & INTERNATIONAL
35-37 Great Charles Street,
Queen'sway, Birmingham B3 3JY
021-236 3781

NORTH
Blackfriars House, The Parsonage,
Manchester M3 2JA
061-833 0427

BELGIUM
Avenue Louise 327,
Boite 4, 1050 Bruxelles
020 322 640 7161/71

HOLLAND
Willemsparkweg 92,
1071 H M Amsterdam
010 3120-780947

Computer Operators

£5,000-£7,000 pa
+ shift allowance

With experience of output processing equipment, operating to OCR standards and processing equipment which includes IBM 3800 and 3211 via MVS consoles. Output processing and control work to service deadlines on a 24-hour basis, 7-day shift working, attracting a generous shift allowance.

Access

Grow with Access...

...and expand your technical skills in the process

Access is one of Europe's leading credit card operations. With demand for our services growing at a consistent rate, our DP capabilities are of increasing importance to our development. We are currently using IBM 3033/3032 and 158 computers operating under MVS/SP with ACFT/VTAM, CICS and ROSCOE with teleprocessing links to Europe and the USA, and will soon be adding an IBM 3081 to our configuration. This means we can offer high calibre operations staff exceptional scope to develop their career in a highly stimulating environment at our Operations Centre in Southend, where we have an integrated approach to career development enabling individuals to progress according to their ability.

Salaries will be dependent upon experience and age. We also offer a

Operations Analysts

£6,800-£11,000 pa

With experience of working in a large multi CPU installation and an in-depth knowledge of MVS/JES2 and packages such as LIBRARIAN and ROSCOE, for space management, resource scheduling, or operations support, involving the development and implementation of new systems including hardware and software applications.

valuable range of large company benefits, including non-contributory pension and life assurance scheme, up to 28 days holiday, loan facilities after a qualifying period, free banking, first-rate working conditions, subsidised restaurant, flexitime working in some DP departments and active sports and social facilities. What's more career prospects within our expanding organisation are excellent.

So build up your network of experience and enjoy excellent career prospects with our young DP team. Please telephone or write for an application form, indicating which post you are interested in to Hazel Stokes, The Joint Credit Card Company, Limited, Chartwell House, 365 Chartwell Square, Southend-on-Sea, Essex SS2 5ST. Tel: Southend-on-Sea (0702) 352211.

THE SILICON VALLEY OF EUROPE

In the early 1970s, the Irish Industrial Development Authority (IDA) recognised the electronics industry as offering major growth prospects for investment and employment. Following an aggressive marketing campaign to attract some of the world leaders in the industry to set up manufacturing plants in Ireland, electronics has now expanded to the point where Ireland is often referred to as the "SILICON VALLEY" of Europe.

17 of the top 100 U.S. electronic companies now have factories in Ireland. Such well-known names as Digital, Mostek, Amdahl, Wang, Apple, General Electric, Westinghouse, Storage Technology and Perkin Elmer are firmly established in Ireland. From Japan came Fujitsu and Nippon Electric and Nissdorf from Germany. Products range across the spectrum of Mini and Main-Frame computers: Microprocessors: Medical and Scientific Instruments: Consumer Electronics: Process Control Equipment: Printers and Telecommunications Equipment.

1985 Output of the Irish electronics industry will exceed IR pounds, 1,200 million and the current employment level of over 15,000 will have doubled by the middle of the decade.

SOFTWARE GROWING
So far we have been talking about the Hardware side of electronics. But Software is dramatically growing in importance within the Data Processing and computing industry. As Hardware costs decrease with mass production, the complexity and cost of Software is growing. The importance is also growing and with it the need for large numbers of trained and skilled staff.

Increased use of high-level computer languages, the development of structural programming techniques and the introduction of wired standard programmes for mass-produced Software has helped to simplify matters. All these solutions, however, depend on people for their success.

50 PER CENT UNDER 25:
And people are exactly what Ireland has to offer. A well-educated, English speaking youthful workforce is yearly appearing on the job market in a country where the population is increasing by 1.5 per cent per annum and 50 per cent of that population is under the age of 25.

The IDA has reacted to this new found change of emphasis from Hardware to Software by introducing an incentive programme to encourage Software development and Data Processing companies. A comprehensive national effort has been made including education of Personnel, Development of Telecommunications, an attractive Tax Environment, Grants, Research and Development Facilities and the setting up of Business parks for service type industries.

Previously IDA grants had been aimed mainly at manufacturing industries. While these facilities are still being promoted as actively as ever, a new scheme of incentives for service industries, which include Data Processing and Software development, were introduced.

This IDA incentive package includes:

EMPLOYMENT GRANTS:
Cash grants payable on the job created. These grants are negotiable and can vary with the characteristics of the employment.

TRAINING GRANTS:
Up to 100 per cent of the cost of an agreed training programme for staff in new service industries. The grants can cover the cost of sending staff abroad for training; The Salaries, travel and subsistence expenses of training personnel and certain training courses geared to meet particular needs.

FAVOURABLE TAX ENVIRONMENT:
A maximum tax rate of 10 per cent is levied on the profits of companies engaged in Software development. This low corporate tax rate is particularly attractive to companies who are

developing new products or expanding into new markets.

CAPITAL GRANTS:
A wide range of non-repayable cash grants are offered by the IDA to Software and Data Processing companies. These grants are given to cover the cost of fixed assets including computers, essential office furniture and accommodation, whether purchased or leased. Where leased, the percentage grant is given as a rent subsidy for the first 5 years.

LOW COST FINANCE:
Due to the favourable tax environment, the Irish banks can offer loan finance at low interest rates.

To qualify for all these incentives, companies must be export orientated and potentially able to create at least 20 jobs.

ALREADY IN IRELAND:
Some of the Software development and Data Processing companies already operating in Ireland which have been granted aid by the IDA include:

FROM THE UK:
Altego (Ireland) Limited: Computer Ancillaries Ltd (CAL): Distributive Computer Systems (DCS).

FROM THE U.S.:
Caci (Ireland) Limited: Micropro (Ireland) Ltd: Insieu Europe Limited: Convery Ireland: Four Phase Overseas Corporation: Informatica General Corporation.

OTHER COUNTRIES:
Bricson Programmatic (Ireland) Limited: The European Software Company: Memory Ireland Limited: Meptec International Limited.

These service type industries are undoubtedly going to grow in importance over the coming years as the information society takes hold. With the IDA incentive package for these industries in operation, Ireland is poised to take more than its share of expansion in this market.

APPOINTMENTS IN SOUTHERN IRELAND

WANG

Wang Laboratories of Massachusetts U.S.A. are the World's largest suppliers of C.R.T. based Word Processing Systems and we employ over 18,000 people in the Support, Sales and Manufacturing of a wide range of products.

In Ireland we are steadily expanding from our current base of over 300 people and as part of the expansion we wish to attract a first class

COMMUNICATIONS ANALYST

COMPETITIVE SALARY & CAR

Your job will be to provide all aspects of pre and post-sales Telecommunications Support for Ireland and in this role you will have pre-sales consultation, networking specification, protocol support plus customer contact on new products such as Wangnet.

As the successful candidate for this key position you will have sound technical experience in data communications in a sophisticated D.P. environment including synchronous protocols such as 3270, 2780/3780, HDLC and SDLC. Expertise in such areas as Message Switching, CICS etc. would be advantageous as would a knowledge of a high level Language.

A good appreciation of the developments in the tele-communications field is essential including broad band technology if possible.

Ideally we are looking for good presentation skills and a person seeking the challenge and satisfaction only to be found in the Sales Support environment.

Training on new developments in the D.P. and Tele-communications technology will be provided both in the U.S.A. and Europe to enable you to upgrade your current skills.

In return we will reward you with an above average benefits package and a competitive salary. A car is provided for this position.

Please write or send a short resume to:

Hamilton Elliott,
Systems Support Manager,
Control Systems Ltd.,
Ferry House,
Lower Mount Street, Dublin 2.

MAKING THE WORLD MORE PRODUCTIVE.

SYSTEMS ANALYSTS AND PROGRAMMERS

OVERSEAS OPPORTUNITY

A major Irish systems house in Dublin require additional personnel with experience of IBM mainframe systems. Programmers should have a minimum of one year's RPG. Systems personnel should have two years on commercial applications. Excellent salary and benefits. Ref: HAL/1/IR

PROJECT LEADERS - CORK

A leading producer of consumer products for export and the home market requires two Project Leaders to embark upon a major development program. This national concern plans to install a distributive network of computing. Salary will not pose a problem for the right people. Ref: HAL/2/IR

C.I.C.S. PROGRAMMERS - DUBLIN

A major marketing control organisation with responsibility for national consumer experts need good Cobol CICS programmers to play a major role in implementing a new real-time on-line system based on an IBM 4341 mainframe. A secure environment with an excellent salary. Ref: HAL/3/IR

SYSTEM 34 PROGRAMMERS

To work on a variety of international projects. This leading Dublin-based consultancy requires just two years' good experience. Naturally, all the benefits associated with a company of this kind can be expected. Ref: HAL/4/IR

ACCOUNTANT ANALYST (ACCA, ACMA)

To act as Implementation Consultant/Manager for product services. A second European language, preferably German, would be a plus. Ref: HAL/5/IR

MAAPICS PROGRAMMER

Two-three years' experience on IBM mainframe systems using RPG II or RPG III. To join an organisation who specialises in IBM software worldwide. This company is Dublin-based and offers excellent rewards. Ref: HAL/6/IR

Edmund Howard & Partners
5 Brighton Road, Surbiton, Surrey, England
Tel: 01-399 9183

SENIOR IMS and MVS SYSTEM PROGRAMMERS

Dublin based international travel

The European Software Company Ltd. is a highly successful Irish company, marketing sophisticated system software products throughout Europe. Due to continued growth and increasing market share to date, we have in excess of 1,000 software products with more than 800 European customers.

Presently we require two Senior System Programmers with a minimum of five years' experience on IBM Systems, encompassing a broad range of software products in particular IMS or MVS, perhaps both. Accompanying these skills candidates should be able to demonstrate a sound business attitude, self motivation and a willingness to travel overseas. These appointments will be based at our new modern offices in Dublin.

Here are two first-class appointments offering challenge, generous rewards, travel and long-term career opportunities. If you have the expertise, don't hesitate. Call our Dublin office immediately, or write giving full details of your career to date.

The European Software Company

5 Herbert Place, Dublin 2 Tel: 502841/602675

SYSTEMS ANALYST PROGRAMMER

Howmedica International, Inc. is an international organization, world leaders in development, manufacture and distribution of orthopedic implants. As part of our ongoing development programme we are in the process of installing on-line computer systems to replace our current batch systems. We recently purchased an IBM System 34 with maximum configuration and 14 work stations and intend to complement this configuration with an IBM System 38 in the near future. We are implementing maps and a number of other software packages to completely integrate our manufacturing, distribution and administrative activities. As a result of this the following vacancies now exist -

Programmer

Applicants must have at least 3 years' experience of RPG II and the IBM System 34. The successful candidate will be responsible for the installation, programming and operations standards.

Systems Analyst

Applicants will have a minimum of 4 years' data processing experience in programming and system analysis. He/She will have been involved in at least one system from design through to user acceptance stage. Ideally, though not essential, the applicant will have experience of a manufacturing industry and maps on an IBM System 34.

The successful applicant will be expected to work with users from requirement analysis to user acceptance stage with the minimum of supervision. This is an ideal career opportunity for the successful candidates to become involved with the latest technology and equipment currently available.

Salaries are competitive and negotiable and the full range of fringe benefits associated with a progressive organisation are in operation.

Applicants should send a brief resume of their career to: The Director of Personnel, Howmedica International Inc., Raheen Industrial Estate, Limerick.

Howmedica International, Inc.

APRIL Advertising

5 Brighton Road, Surbiton, Surrey KT6 5LX.

April 1982

CAN YOU SELL SYSTEMS? OR DESIGN SYSTEMS? OR PROGRAM SYSTEMS? When Pay Is Top Echelon

Are YOU
Are YOU
Seeking

Experienced, Motivated Professional?
A top Career opportunity
Board Prospects - Promotion Prospects
A chance to contribute
A chance to lead others?

We need 30+ Extra Staff immediately

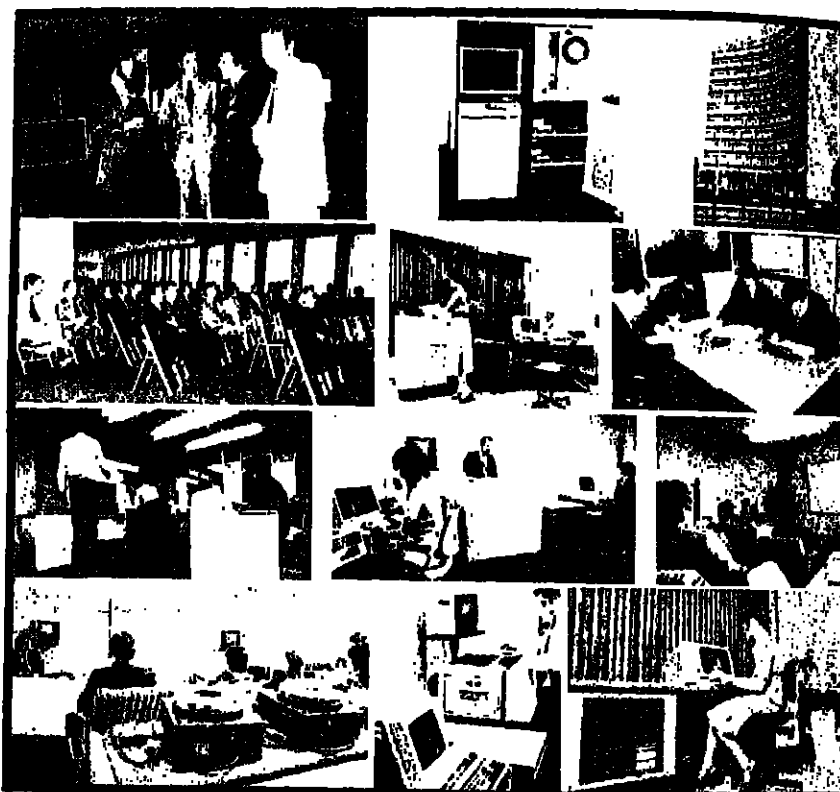
Salesmen & Managers/Director Potential	£15,000-£30,000	+ Car
Systems Managers - Product Managers	Top Salaries	+ Car
Project Managers	11k upwards	+ Car
Analyst/Programmers	Top Market Rate	
COBOL Programmers ICL - Honeywell	Top Market Rate	

We in turn offer the following:

1. Modern Installations, new technology systems with ICL and Honeywell
2. Package-based business systems and original development and projects
3. Attractive salaries, interesting and absorbing projects
4. Travel where required, extensive customer involvement
5. Turnkey Hardware and Software deals second to none
6. Opportunity. The chance to grow with our 100% p.a. growth
7. We'll develop you as far as you can go

We envisage installing up to 300 more systems and packages throughout 1982/3. We need Salesmen to sell them, Project Managers to design, enhance or install them. Programmers to build the extra packages or special systems, staff to install them, maintain them, document them and re-enhance them further. It is a never-ending growth pattern. More work, more people, more prospects. We need the Staff of today and the Leaders of tomorrow. At every level. Sales Staff throughout the entire UK. Development staff throughout the Midlands and N. Staffordshire. Low cost housing. Attractive salaries, real career opportunities. The chance to be part of tomorrow's world today! Work with leading Manufacturers' products, ICL and Honeywell. The latest MINIS and MICROS. We will pay what you are worth, and keep on developing you. The market all top potential staff are moving to today is the Turnkey/OEM/Package sector. We have been in it six years already. How about starting ahead of the field? Help us extend the lead further. Telephone or write to us today for convenient interview dates. We will give you a first, second interview and a decision within 14 days of contact. You will find yourself, if selected, working for many of the leading UK companies as EMS clients. Examples include Banks, Mail Order, Chain Stores, Food Producers, Chemicals, Engineering, Pottery Manufacturers, Car Leasing Systems. So much opportunity for you, so many options. A career second to none! Telephone or write today. We will be expanding every month for the next few years. Why wait? Respond today, whatever the date you are reading the advert - we will still have vacancies. Interviews will be in Birmingham or Newcastle, Staffs initially.

Life with EMS - Trade Winner Systems
Birmingham, Newcastle, Staffs, Home Counties



We need the best staff in the Midlands and North
We have a large rapidly growing customer base
Can you contribute at any level to our organisational plans?
Positions from £5,000 to £30,000 p.a.

EMS

E.M.S. Consultants Limited
9th Floor - Tricorn House
51-53 Hagley Road
Edgbaston
BIRMINGHAM B16 8TP
Tel: 021-454 7906

EMS

E.M.S. Consultants Limited
61 Lower Street
Newcastle-under-Lyme
Staffs ST5 2RS
Tel: 0782-623665

TECHNICAL SERVICES MANAGER c£15,000

City of London

Step up from Systems Programming or Operations into
Hardware/Software Planning

Direct responsibility for:
Systems Programming
Hardware/Software Planning
Disaster and Contingency Planning
Systems Resource and Quality Control

Responsibility to:
The Data Processing Manager

In addition, duties will embrace technical support and guidance in the operations areas, although day to day running and scheduling will be controlled by the Operations Manager. Two systems Programmers will report to the incumbent. The candidate must be fully capable of planning and installing systems up-grades, organising machines layouts centrally and remotely and making positive contribution to lease & contract negotiations.

Our client is dedicated to the advancement of new technology within its field and this post is an outstanding opportunity for career development in the technical management field. Initial interviews will be carried out in London and the North of England.

Candidates must be
fully conversant with
IBM 4331
and ideally 4341
equipment together
with the ability to
communicate
clearly in
both written and
verbal manner.

Daytime
01-836 6775

TELEPHONE: SUE ASHBY & ANNE BETTS

Evenings
0844 53531

Computer Personnel International

THE SPECIALIST RECRUITMENT SERVICE DIVISION OF COMPUTER SYSTEMS INTERNATIONAL



30-32 Southampton Street, London WC2. 01-836 6775

(0517)

Computer Weekly

Special Recruitment Feature

SEPTEMBER
30
ISSUE

OPPORTUNITIES IN
BANKING AND
INSURANCE

full editorial support

Copy Deadline:
Monday, September 27

100,263
copies every week
(ABC Jan-June 1982)

IPC ELECTRICAL-ELECTRONIC PRESS LTD

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. 01-661 0121

A member of IPC Business Press

BUSINESS ANALYST (Commercial Sector)

Part of a large International group with our headquarters in rural Berkshire, we are a leading designer and manufacturer of a wide range of electric cables.

We wish to recruit a Business Analyst, at senior staff level, to advance the development of a computerised system in the commercial sector. Applicants must have had sound experience using computers in commercial systems and have a manufacturing background.

This is a good opportunity for the right person. Benefits will include an attractive salary and relocation expenses, if appropriate.

Please forward your personal details and career history to Mr J. W. Harding, Personnel Manager or telephone or write for an application form to Sterling Cable Company Limited, Bath Road, Aldermaston, Reading RG7 6DD, telephone Woolhampton (073521) 3221.

STERLING

AN AFFILIATE OF RAYTHEON COMMUNICATIONS

LONDON BOROUGH OF SOUTHWARK Systems Programmer

AP4 - £7,509 to £8,145 or
AP5 - £8,379 to £8,883 or
SO1 - £9,198 to £9,741
(Salary review pending)

This vacancy is within a team of four support staff who provide software and operational support to all our mainframe users and are responsible for the support, testing and implementation of all new software products, base software updates and new hardware. The Borough has recently upgraded from an ICL 2900 to an ICL 2866 and runs under VME/B 6.23 with some SYS 4 DME, and is becoming increasingly more involved in TP/IMS applications.

Applicants should have a good working knowledge of VME/B, SCL and COBOL. Experience with TP/IMS systems would be an advantage.

Telephone 01-701 2870, any time for an application form, or write, on a postcard to: The Personnel Officer, London Borough of Southwark, 25 Commercial Way, London SE15 6DG. Please quote reference C9/8/2507 and job title. Last date for receipt of completed Application Form: 1.10.82.

South-East Vacancies

(apply to Croydon Office)

PROJECT LEADER SURREY c£12,000
Our client requires a Project Leader/Consultant with 5-8 years D.P. experience, including analysis and project leadership. The ideal candidate will be familiar with ICL equipment and have experience in financial, especially pensions systems. Foreign travel possible in the future.

PROJECT LEADERS BEDFORD £ Neg.
Several project leaders, with at least 6 years commercial application experience, are required by a leading systems consultancy. Candidates will preferably have varied experience on a wide range of hardware.

ANALYST/PROGRAMMERS NEAR CROYDON £ Neg.
Good COBOL people required, preferably with ICL ME29 experience, but anyone with a proven record of competence will be considered. Attractive salary offered, commensurate with experience.

ANALYST/PROGRAMMERS CRAWLEY £10,000
IBM people with RPG2 and COBOL experience on commercial and manufacturing applications required. This is a large manufacturing Company with a D.P. department of about 25 people, and some travel may be required.

IBM PROGRAMMERS CITY £ Neg.
Large Company is seeking programmers with 2-6 years COBOL & CICS experience to work in a team with a good level of responsibility. Relocation expenses considered for the right people.

PROGRAMMERS DARTFORD £ Neg.
IBM COBOL programmers sought with a minimum of 2 years experience, including database and data communication under O.S. Opportunities to advance in a large forward-looking commercial environment.

PROGRAMMERS SURREY £8,000+
COBOL programmers with 2½-3 years experience required. Knowledge of ICL VME/K, TPMS or IDMS would be an asset but not essential. This Company offers many benefits and an attractive salary to the right applicants.

PROGRAMMERS SURREY £ Neg.
ICL COBOL programmers needed, preferably with MAXIMOP, IDMS and CPMS experience. Attractive remuneration package.

EXCITING CAREER OPPORTUNITY NEW IBM 4331 INSTALLATION

Our Client, a major car fleet management company, which is a subsidiary of a large UK Finance Group, wish to recruit a

SENIOR ANALYST PROGRAMMER CIRCA £10.5K

The Company is now at the start of its DP development programme. The position offers a rare opportunity to participate fully in their DP growth.

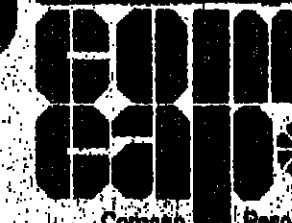
Working from their prestigious new offices in PUTNEY, the successful candidate will find his/her DP skills utilised to the full at this IBM 4331 DOS VSE installation.

Successful candidates must have a minimum of 2 years Cobol programming experience gained in an IBM environment, and at least one years analysis exposure. Previous experience will have included program design to implementation. A knowledge of CICS and/or DL1 would be a distinct advantage. Equally important is the ability to work to deadlines, and to be able to contribute positively to our Client's DP development.

Our Client is anxious to fill the above vacancy without delay. Suitably qualified applicants should telephone JOE HAYNES on 01-723 4063 to arrange an early interview.

(053)

Alpha and Omega
Permanent and Contract DP Recruitment



Corncap Resources Limited
26 Chilworth Street,
London W2 6DT.

01-723 4053

Corncap Resources Limited

BUSINESS ANALYST

SURREY c£13,000
Our client is a well established bureau specialising in services to the insurance industry. Their commitment to expansion has created a vacancy for a Business Analyst to assist them in planning for future growth. This genuinely interesting and challenging appointment is open to applicants with 3 or more years business analysts experience, preferably in a financial/insurance environment.
Ref: T1369

SENIOR ANALYST/PROGRAMMER CITY

..... c£11,000
Want to step up but feel restricted? Our client is a leading city-based company with a small department but a go-ahead approach to D.P. If you have 3 years' PDP 11/RSTS/E experience, using BASIC+ or BASIC+2 and can see yourself leading a small project in the reasonably near future, contact us at once for full details.
Ref: T1370

ANALYST/PROGRAMMER MIDDLESEX

..... c£10,000
Advance your career with an internationally renowned company who are looking to recruit an analyst/programmer to join their progressive D.P. Department. The environment includes an IBM 4331 under DOS/VSE with CICS and a large communications network. Whilst preference will be given to candidates with CICS experience, the minimum requirement is 3-4 years solid IBM COBOL with exposure to systems analysis.
Ref: T1372

ANALYST/PROGRAMMER WEST LONDON

..... c£9,500
Travelling a bore? Bleak prospects? Your VME/IMS skills will be well rewarded by this leading national company both in financial terms and career headway. If you have 3-4 years ICL COBOL experience preferably gained in a 'new-range' machine environment, this is an excellent opportunity to beat the daily rush and fulfil your potential.
Ref: T1371

FOR FULL DETAILS OF THESE AND OTHER VACANCIES, RING TONY COX ON THE NUMBER BELOW OR ON 01-567 3441 OUTSIDE OFFICE HOURS.



Computer Two Thousand Ltd
Data Processing Consultants
217-218 Tottenham Court Road
London W1P 9AF
Tel: 01-636 7584

(0945)

EXCELLENT CONTRACTING OPPORTUNITIES

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities.

INTERNATIONAL

ASSEMBLER, CICS	Systems Programmers	USA
IBM S/38	Programmer/Analyst	Europe
COBOL, CICS	Programmer/Analyst	USA
COBOL, DOS/VSE, VSAM	Programmer/Analyst	USA
PL/I, IMS/DB	Programmer/Analyst	USA

UK

COBOL, IMS DB/DC, ADF a bonus	Senior Programmer	London;
	Programmer/Analysts	Home
COBOL, TSO/SPF	Programmer	Counties
COBOL, CICS, DL/I	Programmer	London
COBOL, DOS/VS	Programmers	Home
		Counties
HP RAPID	Senior Programmer	London
COBOL, ADABAS	Programmers	
	Analyst/Programmers	London
DE/RPG, IBM 5280	Programmer/Analyst	London
CPG	Programmers	London
COBOL, DG M6 8000	Programmer/Analyst	London

For more information please contact:

Resources Department
TANGENT COMPUTER SERVICES LTD.
102/106 South Street
Romford
Essex RM1 1RX
Tel: Romford (0708) 750201
(24-hour answering service)



(0904)



SEPTEMBER SAMPLES

PROGRAMMER/ANALYSTS

Near CROYDON

£6,000 to £9,000

One of the largest electronic companies in the country is anxious to engage people with 1 to 5 years' experience on an IBM environment who now wish to progress into Systems work from programming. Preference will be given to people with CICS and OS/MVS, but this is not a must. Your career is assured with this Company.
CW 371

PL/I PROGRAMMERS AND ANALYST/PROGRAMMERS

GREATER LONDON

£7,500 to £11,000

A large number of IBM installations, all offering further training, are looking for young applicants who wish to go further. Telephone for fuller details on vacancies in the CITY, GRAVESEND, SLOUGH, GREENFORD, COWLEY, BEDFORD, CROYDON, HAYES and WEST LONDON. Each organisation is of course different but career prospects are significant in each case.
CW 372

PROGRAMMERS & SYSTEMS/ANALYST

C. LONDON

£10,000 to £12,000

Here is the chance for young progressive people to join one of the most famous high street chains in their commodities related project. With their present IBM 4341 computer using COBOL ASSEMBLER DOS/VSE & CICS, there is plenty of opportunities for advancement. Full training will be given to non-IBM personnel.
CW 373

FREELANCE PEOPLE - URGENT

IBM DEC IBM IBM IBM IBM IBM ICL	AVABAS VAX COBOL IMS SYS/3 DOS/VSAM DL/I COBOL IMS VME	MATURAL DMS 32 DB/DC RPG - CCP COBOL PL/I MK IV DESIGNERS IDMS	A/P PROG A/P PROG PROG PROG PROG S/A PROG
--	--	--	---

Please phone Alan on 01-458 8535.

PRE- & POST-SALES SUPPORT

HERTS, MIDDX, SURREY

£8,000 to £13,000 + CAR

Things must be picking up! We now have six MINI computer manufacturing companies with offices around the HOME COUNTIES who require well qualified people with the confidence to deal with clients in a pre- and post-sales situation. All vacancies require a programming background with ASSEMBLER, BASIC, FORTRAN, COBOL or COBOL experience on MINIS. The jobs will provide an exciting and satisfying career, so please ring me now.
CW 374

SYSTEMS ENGINEERS

HERTS/SURREY

£8,000 to £11,500 (+ CAR)

We now have eight manufacturers/systems houses looking for all levels of qualified Engineers with Mini-Micro Software or Hardware backgrounds. Some of the following familiarity is required: Assembler, Pascal, Fortran, VAX machines, RSX, RTL2, Data Communications; Message Switching Software, CPM or UNIX. Top perks (including a car) for some of these top jobs, plus possible trips to USA.
CW 375

CONSULTANT/PROGRAMMERS & ANALYSTS

CITY

to £10,000-£18,000

If you are in the age range of 25-35 with a good degree or equivalent, and the multiple skills of having worked in more than one Commercial environment, then now is the chance to benefit from your background. These major manufacturing consultancies require your skills now as a Programmer Analyst or Project Leader.
CW 376

MICRO COMPUTER SALESMEN

SOUTHERN HOME COUNTIES

to £17,000 Q&B

Are you experienced in this new and exciting field? If you have at least one year selling micro-based products then ring us to discuss the excellent kit and selling package this up-and-coming company has to offer. Looking forward to hearing from you!
CW 377

Phone Neville or Michael for permanent vacancies.

Universal Computer Associates Ltd.
Impact House, 20 Accommodation Road
London NW11 8EP, 01-458 8533

(0904)

SALES EXECUTIVE MIDLANDS

£20,000+ Company Car
+ Exciting Prospects

The Company is a well recognised and highly profitable distributor of a leading and established range of Micro and Mini Computer Systems.

Their current expansion programme necessitates the appointment of a Sales Executive, male or female, to capitalise on the company's already substantial success and to further develop business. The benefits include:-

- * Comprehensive packaged software
- * Proven and successful bespoke applications in established vertical markets
- * Well referenced existing client base
- * Basic salary £8500+ negotiable guarantee

If you have at least 12 months experience in sales and need the challenge of working for a small yet progressive company with a Midlands headquarters, contact either of the advising consultants:

Jeff Walton or Roy Torres on 061 236 1157 (daytime) or 061 962 0002/061 962 2828 (evenings and weekends until 9.00pm)

INTERFACE
RECRUITMENT & SELECTION CONSULTANTS

Manchester House, 86 Princess Street, Manchester M1 6NG.
Tel: 061-236 1157.

(0823)

Complete the coupon and return to Effectia Gravis, National House, 66 Wardour Street, London W1V 3HP, for your next PERMANENT or CONTRACT job, or phone 01-439 6481 (24 hrs.).

(BLOCK CAPITALS PLEASE)

Names (in full)

Address (Permanent)

Telephone: Home..... Office

Type of Transport..... Date of Birth

Current Position.....

(Contract/Permanent) delete

Salary/Rate

Position Required.....

(Contract/Permanent) delete

Salary/Rate

Notice Required/Date Available (delete).....

Areas Preferred: First Choice

Second Choice

Experience to date: (Last Position First)

Company Name and Location	From Mth/Year	To Mth/Year	Duties and experience
---------------------------	---------------	-------------	-----------------------

.....

.....

.....

.....

.....

Date

Reg. No.

Signature

DATE

Applications Development Computer Operations And Technical Support Staff

Programmers, Systems Programmers & Systems Analysts at all levels
£6,700 - £11,000 (under review)
Operations Supervisors and Shift Managers
£10,000 - £11,300 (under review)

We are one of the world's leading urban passenger transport organisations, well respected in the transport industry, having our own thriving international consultancy arm.

As you would expect with an organisation that has built such an international reputation, our plans for the application of management services techniques across a whole range of exceptional business areas are very significant. Expanding to keep pace with the demands from our users, we are looking for Operations management and Systems staff to work on a wide range of development and support projects within our Group Management Services Department based near Oxford Circus. The projects cover the whole sphere of activities in which London Transport is involved, ranging from the day-to-day operation and maintenance of buses and trains, to the various support activities which are essential in providing an intensive transport service.

You will have the opportunity to work on extensive real time and on-line systems, distributed processing, database development, computer phototypesetting and computer aided design, and to utilise our range of modern computers, which include IBM 3033, 3031, 4300s and 8100s, and ICL 2960 and 1904S.

All in all, we can offer you everything you need to use and develop your skills, and obtain job satisfaction. Promotional prospects are excellent, and in addition to competitive salaries, you will enjoy valuable FREE TRAVEL on all London Transport services, and other travel benefits on British Rail for you and your family.

LONDON TRANSPORT

Phone Audrey White on 01-227 3653 for further details and an application form, or write to her at Central Personnel, 55 Broadway, London SW1H 0BD, quoting reference CDV 6306/E, stating clearly the type of work (and salary) in which you are interested.

01-227 3653

TEAM LEADERS SENIOR PROGRAMMERS

Attractive contract rates plus guaranteed high expenses

START DATES SEPT/DEC 1982

LBMS Ltd., is involved in an exciting DATABASE DEVELOPMENT PROJECT in WESSEX for a well established ICL user.

Essential Requirements:

- * Six or more years DP experience including COBOL
- * Good knowledge or experience of VME/B
- * Experience or knowledge of MAC
- * Team Leaders must have leadership experience

Desirable Requirements:

- * IDMS
- * TP 2900
- * Structured Programming

6/12 MONTH CONTRACTS

This is an exceptional opportunity to work on a major development project and to reserve your next contract long before the expiry of your current assignment.

Please call:- Roger Perkins, General Manager,
on 01-636 4213 or after 8 pm (049481) 3460
or write to:- LBMS Recruitment,
21 Newman Street, London, W1P 3HB.

LICENSED AS AN
EMPLOYMENT AGENCY
No. 56 5397

Computing
Services
Association

LBMS Recruitment • 21 Newman Street, London, W1P 3HB.



You're not looking for just another job;
we're certainly not looking for just another body!

NOT JUST A JOB ADVERT

It may be that you share our concern for the following things:

- Using up-to-date equipment
- Making it work well
- New and worth-while applications
- Creating user satisfaction
- Recognition of success
- Justifiable pride in the end product of your efforts

If this list rings some bells with you, then we could both be talking about the same thing: a career.

TRIAD is now a well-established group of computer people providing a broad range of services - mostly to blue chip organisations. Recent applications include the monitoring of weather information, control of a whisky bottling plant, robotics, information retrieval on microcomputers and an exciting range of commercial applications. In TRIAD you would have ample opportunity to develop further both in terms of personal responsibility and in terms of the technical nature of your work.

We need project leaders - and others - of proven experience. It is not very important where and how that competence is evidenced: if you haven't worked on the machines and applications that we currently use then we would expect to retrain you.

Starting salaries are up to £14,000 per annum plus significant benefits. If you are interested please contact:

Erwin Schnelder
TRIAD Computing Systems Limited
42 Kingsway
London WC2B 6EX
01-831 7211

Offices in London and Guildford

TRIAD

LONDON & HOME COUNTIES PROGRAMMERS £8000

There are currently a number of outstanding opportunities available for good COBOL programmers with experience of HEWLETT PACKARD hardware. Our client base covers companies in the FINANCIAL, COMMERCIAL, and MANUFACTURING sectors. Knowledge of H.P. software would be advantageous for most of these positions, which offer good remuneration and career prospects. SGEN

EAST LONDON PROGRAMMER/ANALYST £10K MIN

SHIPPING and FREIGHT FORWARDING company running TWIN IBM SYSTEM 34s require a good PROGRAMMER/ANALYST with RPG II experience. Knowledge of a European Foreign language would be advantageous as there will be liaison with the company's European Foreign branches, and occasional overseas travel. S3574

S W HERTS AN./PROGRAMMERS & ANALYSTS to £11,500

A Hertfordshire-based company has requirements for Analyst/Programmers and Analysts at various levels for their Development teams. Our Client is heavily committed to the implementation of new systems involving Manufacturing, Bills of Material and Stock Control applications. A sound ICL COBOL background is required for the Analyst/Programmer vacancies and 3 to 4 years systems experience for those at the Analyst level. An excellent salary commensurate with experience will be paid together with a comprehensive benefits package which includes Bonus and Relocation, where necessary. C4084

CITY ANALYST/PROGRAMMERS to £10,500 + MORTGAGE

Expansion of a major Bank's EDP team affords an exciting opportunity for Analyst/Programmers with at least 2 years experience in banking, financial or commercial applications. The work involves implementation and development of systems, both in the UK and abroad on modern DEC machines, therefore a background which includes Basic, Cobol or similar language, working with large 'mini' computers is desirable. C3914

CITY TEAM LEADER to £12,500

An International Software House is seeking a Team Leader for one of its Banking systems development groups. The candidate should already have supervisory experience or be a Senior Analyst/Programmer ready to take up such responsibility. A background involving financial systems design and experience with DEC equipment would be particularly relevant. The salary offered will be augmented by an excellent Benefits package. C3488

CITY ANALYSTS £NEG + MORTGAGE

A leading city insurance company urgently requires two Systems Analysts with between 1 and 3 years' formal Analysts experience and an ICL COBOL programming background. These are excellent opportunities in a long term development situation attracting a full range of Company Benefits as well as negotiable basic salary. C4083

S E LONDON PROGRAMMERS to £9,500 + MORTGAGE

An International Banking organisation has several vacancies for Programmers with 2 to 3 years' COBOL experience gained in a CICS environment. They are utilizing IBM 4341's locally, linked to larger IBM mainframes off-site. The work involves a cross-section of Banking applications and offers every opportunity to progress quickly through a definite career structure. The basic salary is greatly enhanced by a full Banking benefits package. R3642

CITY PROGRAMMER to £8,000 + BENEFITS

Our clients are in the Insurance sector and require a bright, young COBOL programmer with around 2 years' HONEYWELL experience. Candidates should have used TDS and will be expected to contribute to a team variously engaged on new applications and handling maintenance and conversion from OS 2000. BENEFITS include MORTGAGE and Bonus. R3826

CITY ANALYST PROGRAMMER to £10,000

We are looking for a mature Analyst/Programmer for our clients, a famous name in the London Insurance Sector. Solid COBOL experience gained in a large-scale IBM environment is an essential qualification for candidates who are seeking a career with enormous scope for development and the chance to be trained in another LANGUAGE within 12 months or so. Superb environment and conditions of employment. R3798

G LONDON PROGRAMMERS to £9,000 + BENEFITS

An International banking organisation is looking for 2 IBM ASSEMBLER applications programmers to support their well established team. The systems being developed are a mixture of on-line and batch work using latest IBM mid-range hardware. The organisation offers a well-established career path for progression together with a full range of BANKING BENEFITS. R4088

LONDON & H COUNTIES PROGRAMMERS AND ANALYST/PROGRAMMERS £HIGH

We are currently dealing with a number of highly successful SOFTWARE HOUSES, who need to recruit experienced RPG II or III programmers. The companies concerned deal mainly with the FINANCIAL and COMMERCIAL sectors, but there is also interest in people with MANUFACTURING backgrounds. IBM SYSTEM 34 or 38 experience would be useful, but any machine RPG would be considered, as re-training is usually provided where necessary. Salary levels are very high and career prospects are excellent for these positions. S3958

S W LONDON SENIOR ANALYST/PROGRAMMER to £12,000

This MANUFACTURING company is looking to recruit a SENIOR ANALYST/PROGRAMMER with experience of RPG II or RPG III gained in an IBM GSD environment. The company are currently utilizing an IBM SYSTEM 34 and will shortly take delivery of a SYSTEM 38. The successful candidate will have worked with manufacturing applications and will have experience of the manufacturing package MAAPICS. He or she will be involved in the development of new systems and will receive an attractive salary with benefits. S3950

(0891)



Targa Computer Recruitment

6 Liverpool Street London EC2M 7NH Telephone 01-283 9941 Telex 894858

Qume

Qume (UK) Limited

SALES EXECUTIVE

Qume Corporation, a leading manufacturer of Delay-wheel Printers and Floppy Disk Drives, has a requirement for an O.E.M. Sales Executive to handle sales of its products in the UK. The position, which is based in Reading, would suit a self-motivated person having proven record for sales of computer peripherals in the O.E.M. or Distribution markets.

A salary commensurate with experience will be complemented by an attractive commission scheme, benefits programme and company car.

For further information please contact:

Caroline Saunders
QUME (UK) LIMITED
Bridgewater Close
Reading RG3 1JT
Tel: 0734 584846 (0895)

Imperial Cancer Research Fund

SENIOR OPERATOR

DEC 20/80

required by our Research Computer Unit for a nine-months appointment. The Unit provides the Computer services for the scientific work of the Fund, and we require a person conversant with scientific time-sharing systems operations, a good knowledge of BASIC or FORTRAN and experience in assembly level work. Salary range £8045 to £8080 (revision pending).

For further information and application form write or telephone Ms S. M. Hurley, Imperial Cancer Research Fund, Lincoln's Inn Fields, London W.C.2. on 01-242 0200 ext. 305 quoting Ref. 119/82. (0871)

Contractors

Resulting from our continuous marketing campaign we will always have contracts available that you are unaware of.

The chances are that we will know of a job to suit you in your area - if not now, then certainly in the near future.

Give yourself the opportunity to consider these contracts. Contact Roger Radford or Richard Jones on 021-643 4700. Telex: 337045.

Compuhire

Temple House
43-49 New Street, Birmingham B2 4LH.
Tel: 021-643 4700 Telex: 337045
Licensed by the D.O.B. as an 'Employment' Business (M1337)

UNIQUE OPPORTUNITIES FOR LECTURERS

Micro Systems Centre requires 2 Lecturers for a new industry training programme in BASIC computing and systems analysis on micro and mini systems. Posts are for senior and junior positions starting in October and December. Salaries in ranges 8-10K and 6-8K.

Further details available from:
Chief Training Officer
DDI Limited
Orient House
Granby Row
Manchester M1 7AN
Tel: 061-236 4218/4228 (0615)

PROGRAMMERS to 10K

NCR/IBM/COBOL/Insurance/Banking
SENIOR PROGRAMMER
COBOL/PL1/Database/CICS/IMS

N. England/Home Counties
to £15K
London/Manchester/Croydon

SALES EXECUTIVES
Micros/Peripherals/Minis/Terminals

to £25K
London/Home Counties

ANALYST PROGRAMMERS
COBOL/IBM/HP/ICL/ME28

to £10K
W. London/Surrey

SOFTWARE ENGINEERS
FERRANTI/ARGOS

to £12K
Berks/Essex/Surrey

SOFTWARE ENGINEERS
Winchester Drives/Control Systems

to £12K
Home Counties

SYSTEMS ANALYST & PROGRAMMERS
On Line exp/VMEB or K/or George 3

to £11K
Surrey/East Anglia/Bucks

SOFTWARE DESIGNERS
COBOL/PASCAL/RTL2

to 13K
Sussex

SYSTEMS PROGRAMMERS
IBM/Burroughs

to £14K
London/Home Counties

ANALYST PROGRAMMERS
ICL 2958/Database/Fortran/Pascal

to £12K
London

ANALYST PROGRAMMERS
Dec/Dg/Wang/Basil/Prime

to £12K
Berks/Bucks

HARDWARE DEVELOPMENT
Controls/Winchester Disks Drives & Systems

to £12K
Home Counties

SOFTWARE ENGINEERS
RADAR/Military/ATECORAL Mascot/Bates

to 11K
Surrey/West Country Home Counties

PRINCIPAL CONSULTANTS
Commercial Software exp/Accounting qualifications

to 15K
Berks

Data General COBOL

to £14K
London/Home Counties

PROGRAMMERS
Commercial/Manufacturing

to £15K
Home Counties

ENGINEERING MANAGER
Winchester Disk Drives

to £12K
West Country/Essex

PROGRAMMERS CAD/CAM

to £12K
UK WIDE

TECHNICAL SUPPORT

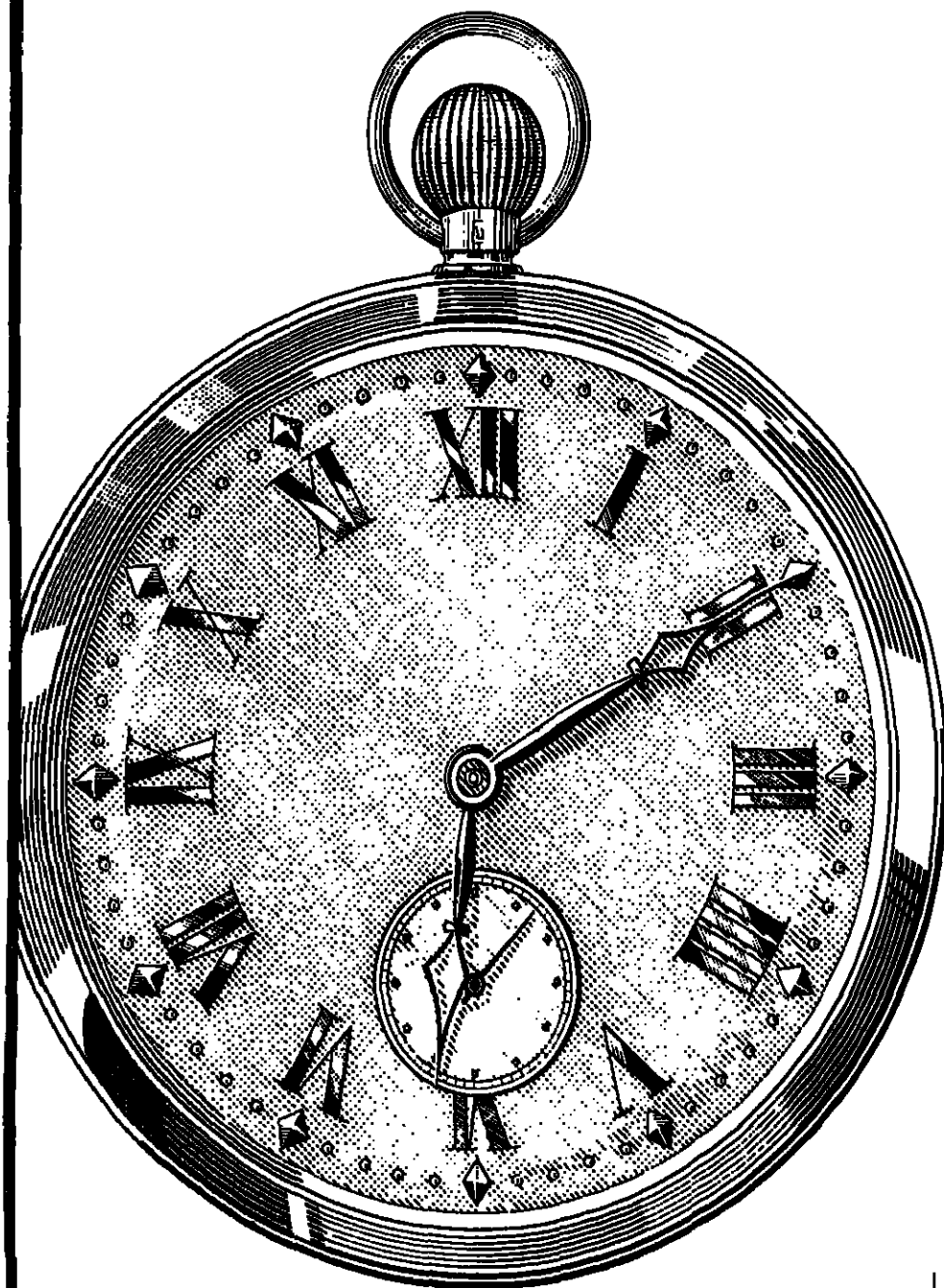
to £11K
Northants/Bristol

SENIOR PROGRAMMERS
COBOL/IMS

For the opportunity to hear about YOUR kind of job throughout the U.K. telephone:

Sloangate

(SLOANGATE LIMITED)
214 KING'S ROAD
KINGSTON-UPON-THAMES
SURREY KT2 8XQ
TELEPHONE: 01-548 8228 (0815)



Time to apply yourself?

SENIOR SYSTEMS ANALYSTS c. £11,500

It's ten past six and perhaps you're on your way home or, for that matter, it could be quarter past eleven and you're having a mid-morning coffee break. The point is, whatever the time, isn't it time you thought about applying yourself in an environment that is both stimulating and rewarding?

We are seeking Senior Systems Analysts who will be developing sophisticated real time, on-line projects which include Corporate File Management, Purchase Order Management and Forecasting systems. Now at the functional specification stage, you will be taking on the challenge in the development and implementation of these systems which will ultimately make a significant contribution to the continued growth and success of Sainsbury's as a whole.

In hardware terms, Sainsbury's are a diverse site with dual ICL 2976's running under VMEB. The IBM 4341's will be running under MVS and supporting the development of these new management systems. Therefore, it is essential that you will already have gained at least 3 years' IBM analysis experience. It is likely you will have a programming background; working knowledge of MVS, CICS and DL/I would also be advantageous. However, if you feel that your IBM analysis experience may not match the senior role, we would also be interested in discussing your career with you.

Based at Blackfriars in Central London, the prospect of career advancement is very real, on top of which there is an excellent benefits package which includes a merit based, annual salary review; profit sharing; interest-free season ticket loans; share purchase scheme; and subsidised restaurant. Relocation assistance will also be available where appropriate.

Now isn't it time you applied yourself?

In the first instance, either forward your C.V. to Mrs Lorraine Cuthersides or contact her at the address or telephone below for an application form and information package.

SAINSBURY'S

J. Sainsbury plc, Stamford House, Stamford Street, London SE1 9LL 01-921 6047

MOVES WITHIN SYSTEM & PROGRAMMING

SEN. ANALYST/PROGRAMMER £15,000c

+car and medical cover

Are you self motivated? Would you welcome the opportunity to run a department within a company whose profits are on the increase? Our clients would welcome your expertise which should include a thorough knowledge of ASSEMBLER and VM backed up by a previous involvement within a NETWORK/SYSTEMS function. Our clients specialise in publishing, and although most of your work will be applications, they are in the process of putting all work online, so a busy environment awaits the successful person - IS THAT YOU?

PL1 PROGRAMMERS £7,000-£10,000

+benefits

Do you have a minimum of one year's commercial experience? Would you like the chance to move into a challenging environment where a lot of development is underway. Our client is adding to their existing teams and would be interested in you if you have a good knowledge of PL1; if you can also demonstrate good supervisory skills this will greatly aid to your chances. Call us for more information.

EMJAY
COMPUTER
SERVICES



ANALYSTS/DESIGNERS £14,000c

+excellent benefits inc. profit share and mortgage

Do you have at least five years' experience in DP. Can you offer a good knowledge of financial systems within an IBM environment. Our client is expanding and can offer excellent prospects to the right people. If your career is in need of a boost, this could be the chance you are seeking. Call now to discuss this opportunity.

OS/MVS OPPORTUNITIES IN OPERATIONS

OS/MVS OPERATORS circa £8,000-£9,000

Due to a vast expansion plan, I have clients who need experienced reliable operators with good potential. Two years' experience of OS VS1/MVS JES2 is essential. You will have the opportunity to move into sites which will offer you stability, progression and an active work environment. A knowledge of TSO and other IBM utilities would be advantageous.

Locality: Borders N W London & Central London

Emjay Computer Services
Lonsdale Chambers
27 Chancery Lane
London WC2

01-404 4339

24-hour Answerphone 01-242 0076

TELECOMMUNICATIONS CONTROLLER

£10,000-£12,000

My clients are in the process of setting up a telecom department. They need a candidate with a good working knowledge of MVS, JES2, CICS, TSO and SNA. You need to be motivated, ambitious, presentable and have the initiative and personality to work alongside the manager in the development of this new department. Ideally someone with supervisory status linked with a couple of years' experience as a network operator. This job offers a great salary, managerial prospects and an enormous challenge for the right candidate.

Programmers: Telephone Lynda Abi

OPS SUPERVISOR

£8000c. DAY JOB

Are you ready to make this move into a supervisory role? Your technical background must be MVS JES2, CICS, VTAM, JCL, and a knowledge of OS VS1 are the requirements. This job involves planning, analyst work, network involvement, and supervisory potential is essential. An ideal candidate would be a S/L who has worked on a small but busy site who has the calibre to move into this challenging role. Locality: Borders N W London

Operations: Telephone Maggie Shlrman

TANGENT

is an International Software House. We require the following permanent and freelance personnel to meet current business demands.

SYSTEM 38 — Project Leaders and Senior Analyst/Programmers

SYSTEM 5280 — Senior Analyst/Programmers and Analyst/Programmers

SYSTEM 34 — Project Leaders, Senior Analyst/Programmers and Analyst/Programmers

Locations are varied and international travel to USA, Middle and Far East as well as Europe is probable for all positions.

A minimum of 5 years D. P. experience which for SYSTEM 38 and 5280 positions must include 6-12 months relevant experience. For SYSTEM 34, 2 years relevant experience is also required.

For more information please contact:



Resources Department
TANGENT COMPUTER SERVICES
102/100 South Street
Romford, Essex

Tel: Romford (0708) 750201
(24-hour answering service)

(0957)

Senior Computer Operator

£6,719 p.a. including S.A. under review for 1st October
Southampton

We operate a Burroughs 6900 working a two shift system covering 08.00 — 24.00 hours. We process a variety of batch, DATABASE, on-line and International Transmission System.

Currently we have a Senior Operator vacancy and if such a post appeals to you and you have already obtained at least two years' large system experience preferably with Burroughs' equipment, we should be interested to hear from you. Alternatively if you have less experience than this but on a large/medium system and you find this type of position challenging we should also like to hear from you.

A.C.T. Services Ltd., operates worldwide through Container Services on behalf of five major shipping lines and is based in Southampton. Where appropriate we will pay relocation expenses. In addition to the above salary we offer the usual large company fringe benefits.

For further information and an application form, please write or telephone (reversing the charges if you wish) to:
Mrs. L. Lisney, Assistant Personnel Officer, A.C.T. Services Ltd., Richmond House, Terminus Terrace, Southampton.
Tel: (0703) 34433 ext. 3305.

ROYAL KINGSTON!

Systems Analyst/Programmer C£10K C£7.5K
Here's your chance to join a well-established Kingston company with an in-house IBM Mainframe using COBOL, CICS and DL/I for financial accounting applications. Friendly, secure company on flexitime, with super offices and shopping facilities.

Programming Project Leader C£11.5K C£11.5K
Thriving electronics equipment company with a healthy project record and excellent future prospects requires a Programming Project Leader for their Order Processing and general accounting Systems and a COBOL DATABASE and TP.

Put up the phone now and ask for George! Confidentiality: 01/1025.

AB EXECUTIVE (KINGSTON) LIMITED
01-549 6441 (24 hrs.)

FOR

CLASSIFIED
ADVERTISING USE

DIRECT LINE

01-661 0121

SMR

Sales & Marketing Recruiters Ltd

A Sales and Marketing Services Company

AREA SALES MANAGERS

"Two Exceptional Career Opportunities"

Our client is one of the largest international companies in the world with considerable investment in new product development and an extremely powerful marketing capability. Having created a new operation within its extensive and successful computing business and having already appointed a National Sales Manager, it is now offering a superb career opportunity in first line sales management.

We are seeking two skilled area managers with considerable field sales experience of Mini and/or Micro computers to spearhead this new sales operation dealing specifically with OEM/Dealer outlets working from two locations in the UK —

MIDLANDS AND NORTH
AND
LONDON AND SOUTH

This will be a small specialist team with an anticipated complement of around 6 sales people within the initial period of development. This opportunity is therefore likely to suit applicants currently performing at Area Sales Management or Senior Sales Executive level for a major manufacturer or in a first line sales management capacity for a Senior Micro computer operation. If you have a track record of successful selling experience in Mini or Micro computers and the potential for advancement with a dynamic company that is an industry leader, then we would like to meet you.

Please supply complete career details to Peter Hubble or Alan Scott quoting reference HSM/1002

LONDON & SOUTH

29 Oxford Street
London W1. (01) 734 9776

MIDLANDS & NORTH

39 Bore Street, Lichfield
Staffs. (05432) 56612

Answering Service after 6 pm and weekends
SALES TRAINING, MARKET RESEARCH, RECRUITMENT

GTE

PROGRAMMERS

Circa £7,000

GTE Directories are the official sales contractor to British Telecom to sell Yellow Pages advertising in London, South and East of England. We are a subsidiary of an American corporation which is currently the largest publisher of Yellow Pages internationally.

Reporting to the Senior Programmer/Analyst you will be responsible for the day-to-day maintenance of our recently created Software as well as assisting with the design and development of future programmes.

Candidates, preferably aged 23-35, should have a minimum of 2 1/2 years' Data General experience or equivalent, and be conversant with Assembler/Cobol languages. You will be looking for career advancement, be self-motivated and enjoy working with the minimum of supervision. Starting salary will be circa £7,000 and other benefits associated with an international company.

Please Tel.

Andrea Flatford
on
Stough 77707

For an application form write to:

GTE DIRECTORIES
Director/Personnel
270280 High Street
Slough, Berks.

Yellow Pages

BOX
NUMBERS

Box number replies should be addressed to:

Box Number:
via Computer Weekly
Quadrant House
The Quadrant
Barton, Surrey GU2 5AB

TASK FORCE

(0782) 410217/8
44 Kingsway
Stoke-on-Trent.
Staffs ST4 1JH

(0702) 615551/2
2 Southchurch Road
Southend-on-Sea
Essex SS1 2NE

S3 WRITERS

MIDLANDS

LONG CONTRACTS
GOOD RATES
IMMEDIATE/
OCTOBER STARTS

01-404 4339

